

Facility: <u>Wolf Creek</u>		Date of Examination: <u>July 2013</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: _____

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
R.A.1 Conduct of Operations	N, R	Using EMG ES-04, Natural Circulation Cooldown, step 10b: Verify Cold Shutdown Boron Concentration by Sampling: Determine RCS boron concentration on a total mass basis, using Attachment A, DETERMINATION OF RCS BORON CONCENTRATION BASED ON TOTAL MASS 2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation. (CFR 41.10/43.5/45.2/45.6) (4.3/4.4)
R.A.2 Conduct of Operations	D, R	Manually determine Quadrant Power Tilt Ratio (QPTR) using STS RE-012, QPTR Determination. 2.1.20 Ability to interpret and execute procedure steps. (CFR 41.10/43.5/45.12) (4.6/4.6)
R.A.3 Equipment Control	N, R	Complete STS BG-005A, BORIC ACID TRANSFER SYSTEM INSERVICE PUMP A TEST, Attachment A, Data Sheet. 2.2.12 Knowledge of surveillance procedures. (CFR 41.10/45.13) (3.7/4.1)
R.A.4 Radiation Control	N, R	Using a Radiation Work Permit (RWP) and previously received dose, calculate the amount of time an Operator has to complete hanging tags on a tagout. 2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions. (CFR 41.12/43.4/45.10) (3.2/3.7)
Emergency Procedures/Plan		Not used in 2013

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:

(C)ontrol room, (S)imulator, or Class(R)oom
 (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
 (N)ew or (M)odified from bank (≥ 1)
 (P)revious 2 exams (≤ 1; randomly selected)

Facility: Wolf Creek		Date of Examination: July 2013
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: _____

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
S.A.1 Conduct of Operations	N, R	Review/Approve reactivity calculation for an up power of 10%. 2.1.37 Knowledge of procedures, guidelines, or limitations associated with reactivity management. (CFR 41.1/43.6/45.6) (4.3/4.6)
S.A.2 Conduct of Operations	D, R	Review/Approve manual calculation of RTP (STS SE-002, Manual Calculation of Reactor Thermal Power) 2.1.20 Ability to interpret and execute procedure steps. (CFR 41.10/43.5/45.12) (4.6/4.6)
S.A.3 Equipment Control	D, R	Review Quadrant Power Tilt Ratio and applicable Technical Specifications. 2.2.12 Knowledge of surveillance procedures (CFR 41.10/45.13) (3.7/4.1) 2.2.42 Ability to recognize system parameters that are entry level conditions for Technical Specifications. (CFR 41.7/41.10/43.2/43.3/45.3) (3.9/4.6)
S.A.4 Radiation Control	N, R	Review/Approve/Evaluate a Containment Purge Permit (CPP) for correctness prior to restart. 2.3.6 Ability to approve release permits. (CFR 41.13/43.4/45.10) (2.0/3.8) 2.3.11 Ability to control radiation releases. (CFR 41.11/43.4/45.10) (3.8/4.3)
S.A.5 Emergency Procedures/Plan	D, S	In the simulator setting, perform Emergency Plan classification within fifteen minutes, and accurately and correctly complete an Emergency Notification form (EPF 06-007-01). Time Critical JPM (only the classify). 2.4.41 Knowledge of the emergency action level thresholds and classifications. (CFR 41.10/43.5/45.11) (2.9/4.6) 2.4.44 Knowledge of emergency plan protective action recommendations. (CFR 41.10/41.12/43.5/45.11) (2.4/4.4)

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:	(C)ontrol room, (S)imulator, or Class (R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1 ; randomly selected)
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Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Calculate RCS Boron Concentration Based on Total Mass	JPM No.:	R.A.1
K/A Reference:	2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation. (4.3)		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	X	Simulator	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	<p>The crew is performing a natural circulation cooldown using EMG ES-04, NATURAL CIRCULATION COOLDOWN, and is currently at step 10b.</p> <p>Chemistry reports boron sample results are:</p> <ul style="list-style-type: none"> • RCS Hot Leg Loop 1 - 995 ppm • RCS Hot Leg Loop 3 - 905 ppm • Letdown line isolated • PZR concentration - 800 ppm <p>PZR level is 27% and stable.</p>
Task Standard:	Applicant completed the calculation from EMG ES-04, NATURAL CIRCULATION COOLDOWN, Attachment 'A' and determined RCS boron concentration to be 899.54 ppm (range of 898 to 900 to account for rounding errors).
Required Materials:	EMG ES-04 (rev 16), NATURAL CIRCULATION COOLDOWN; calculator
General References:	EMG ES-04, NATURAL CIRCULATION COOLDOWN
Handouts:	EMG ES-04, NATURAL CIRCULATION COOLDOWN

Initiating Cue:	CRS directs you to complete in EMG ES-04, NATURAL CIRCULATION COOLDOWN, step 10b, Verify Cold Shutdown Boron Concentration By Sampling: Determine RCS boron concentration on a total mass basis, using Attachment 'A', DETERMINATION OF RCS BORON CONCENTRATION BASED ON TOTAL MASS. Document your results on the provided EMG ES-04, NATURAL CIRCULATION COOLDOWN.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	10 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	NOTE: Letdown line sample is used to determine RCS cold leg concentration. If letdown is isolated, this sample is not required.
	Performance Step: 1 A1	Record Chemistry sample results: a. RCS Concentrations: <ul style="list-style-type: none"> RCS Hot Leg Loop 1 - 995 ppm RCS Hot Leg Loop 3 - 905 ppm Letdown Line N/A ppm b. PZR Concentration 800 ppm
	Standard:	Applicant recorded Chemistry sample results from cue sheet.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Attachment 'A' table under step A2
	Performance Step: 2 A2	Determine PZR and RCS multipliers from the following table:
	Standard:	Applicant determined PZR and RCS multipliers to be 0.052 and 0.948 respectively based on PZR level of 27% (given on the cue sheet)
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 3 A3	Determine PZR contribution = A <ul style="list-style-type: none"> (PZR concentration) X (PZR multiplier) = (A)
	Standard:	Applicant determined 800 ppm X 0.052 = 41.6 ppm
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 4 A4	Determine RCS contribution = B: <ul style="list-style-type: none"> (Lowest RCS concentration) X (RCS multiplier) = (B)
	Standard:	Applicant determined 905 ppm X 0.948 = 857.94 ppm
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 5 A5	Determine RCS boron concentration based on total mass = C: <ul style="list-style-type: none"> (A) + (B) = (C)
	Standard:	Applicant determined 41.6 ppm + 857.94 ppm = 899.54 ppm (range of 898 to 900 to account for rounding errors)
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM IS COMPLETE.
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STOP TIME: _____

Job Performance Measure No.:	R.A.1					
Examinee's Name:						
Examiner's Name:						
Date Performed:						
Facility Evaluator:						
Number of Attempts:						
Time to Complete:						
<u>Question Documentation:</u>						
Question:						
Response:						
Result:		SAT			UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>The crew is performing a natural circulation cooldown using EMG ES-04, NATURAL CIRCULATION COOLDOWN, and is currently at step 10b.</p> <p>Chemistry reports boron sample results are:</p> <ul style="list-style-type: none">• RCS Hot Leg Loop 1 - 995 ppm• RCS Hot Leg Loop 3 - 905 ppm• Letdown line isolated• PZR concentration - 800 ppm <p>PZR level is 27% and stable.</p>
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INITIATING CUE:	<p>CRS directs you to complete in EMG ES-04, NATURAL CIRCULATION COOLDOWN, step 10b, Verify Cold Shutdown Boron Concentration By Sampling: Determine RCS boron concentration on a total mass basis, using Attachment 'A', DETERMINATION OF RCS BORON CONCENTRATION BASED ON TOTAL MASS.</p> <p>Document your results on the provided EMG ES-04, NATURAL CIRCULATION COOLDOWN.</p>
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RA2 – proprietary

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Review STS BG-005A for errors	JPM No.:	R.A.3
K/A Reference:	2.2.12 Knowledge of surveillance procedures. (3.7)		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	X	Simulator	
		Plant	

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	Crew has just completed STS BG-005A, BORIC ACID TRANSFER SYSTEM INSERVICE PUMP 'A' TEST. All data has been collected and recorded on Attachment 'A'.
Task Standard:	Refer to attached KEY for errors on data sheet (changes highlighted in yellow). Determined pump FAILED surveillance. Provided the corrected data sheet to the SM/CRS
Required Materials:	STS BG-005A rev 28, BORIC ACID TRANSFER SYSTEM INSERVICE PUMP 'A' TEST with Attachment 'A' completed
General References:	STS BG-005A, BORIC ACID TRANSFER SYSTEM INSERVICE PUMP 'A' TEST
Handouts:	STS BG-005A, BORIC ACID TRANSFER SYSTEM INSERVICE PUMP 'A' TEST completed Attachment 'A'
Initiating Cue:	CRS assigns you to peer check Attachment 'A' for completion and correctness. Document any changes on the provided Attachment 'A'.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes

Validation Time:	15 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Evaluator NOTE	A Key has been provided (changes highlighted in yellow). Each incorrect item on the as given Attachment 'A' is listed below and all are critical steps. Each item can be completed in any order. No cue's given for correct steps
*	Performance Step: 8.1.13 V2 Alternate Path Step	Reviews Attachment 'A' for completeness and correctness.
	Standard:	Applicant recognized step 8.1.13 V2 was marked incorrectly and changed to UNSAT.
	Cue:	If notified then cue: CRS will initiate a CR for this item.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 8.1.20	Reviews Attachment 'A' for completeness and correctness.
	Standard:	Applicant recognized step 8.1.20 was marked incorrectly and changed to UNSAT.
	Cue:	If notified then cue: CRS will initiate a CR for this item.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 6	Reviews Attachment 'A' for completeness and correctness.
	Standard:	Applicant determined 'A' Boric Acid Transfer Pump failed the surveillance. Notified the SM/CRS.
	Cue:	When notified then cue: 'A' Boric Acid Transfer Pump has failed the surveillance test.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM IS COMPLETE.
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STOP TIME: _____

Job Performance Measure No.:	R.A.3				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	Crew has just completed STS BG-005A, BORIC ACID TRANSFER SYSTEM INSERVICE PUMP 'A' TEST. All data has been collected and recorded on Attachment 'A'.
INITIATING CUE:	CRS assigns you to peer check Attachment 'A' for completion and correctness. Document any changes on the provided Attachment 'A'.

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Determine radiological requirements for High Radiation Area Entry	JPM No.:	R.A.4
K/A Reference:	2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions. (3.2)		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	X	Simulator	
		Plant	

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	An extensive tagout containing a large number of tags is required to be hung in the Auxiliary Building. The first tag on the tagout, which has already been completed by you, was located in a 120 mR/hr field. It took 8 minutes to close this valve and hang the tag on it. This was completed on a High Rad RWP. The remainder of the tags are located in a General Area dose rate of 30 mR/hr. You are now using RWP 130005 task 5 (provided).
Task Standard:	Applicant determined that the MAXIMUM time that can be spent hanging tags in the General Area is 18 minutes.
Required Materials:	None
General References:	GT1245201, Generic Radiation Worker rev 27, RWP 130005 Rev 000
Handouts:	RWP 130005 Rev 000
Initiating Cue:	Determine the MAXIMUM time that can be spent hanging the <u>remaining</u> tags in the General Area without exceeding the dose limit for the RWP. Document your results on the cue sheet.
Time Critical Task: (Yes or No)	No

Alternate Success Path: (Yes or No)	No
Validation Time:	15 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

*	Performance Step: 1	Determine total dose received hanging tags in the 120 mR/hr field.
	Standard:	Applicant calculated 16 mR/hr. $120 \text{ mR/hr} \times 8 \text{ min} \div 60 \text{ min/hr} = 16 \text{ mR.}$
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 2	Determine the available dose left to hang the remainder of the tagout based on task 5 of RWP 130005.
	Standard:	Applicant calculated 9 mR. $25\text{mR} - 16 \text{ mR} = 9 \text{ mR.}$
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 3	Determine MAX time to hang remainder of the tags based on MAX dose allowed.
	Standard:	Applicant calculated 18 minutes. $9 \text{ mR} \div 30 \text{ mR/hr} \times 60 \text{ min/hr} = 18 \text{ minutes.}$
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM IS COMPLETE.
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STOP TIME: _____

Job Performance Measure No.:	R.A.4				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT			UNSAT

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>An extensive tagout containing a large number of tags is required to be hung in the Auxiliary Building. The first tag on the tagout, which has already been completed by you, was located in a 120 mR/hr field. It took 8 minutes to close this valve and hang the tag on it. This was completed on a High Rad RWP.</p> <p>The remainder of the tags are located in a General Area dose rate of 30 mR/hr. You are now using RWP 130005 task 5 (provided).</p>
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INITIATING CUE:	<p>Determine the MAXIMUM time that can be spent hanging the <u>remaining</u> tags in the General Area without exceeding the dose limit for the RWP. Document your results on the cue sheet.</p>
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SA1 – proprietary

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Review manual calculation of RTP STS SE-002, Manual Calculation of Reactor Thermal Power.	JPM No.:	S.A.2
K/A Reference:	2.1.20 Ability to interpret and execute procedure steps. (4.6)		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	X	Simulator	
		Plant	

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	You are the Control Room Supervisor. The Reactor Operator (RO) has completed STS SE-002, MANUAL CALCULATION OF REACTOR THERMAL POWER through step 9.1. The RO reports no NI adjustments per the procedure. STS SE-001, POWER RANGE ADJUSTMENT TO CALORIMETRIC, calculated power results are 66.4% power. A personal computer is not available.
Task Standard:	Applicant disapproved the manual calculation of reactor thermal power. The following errors were discovered: 1. Unique error: At C.4, the calculation for Power is incorrect – the RO used Total Average Feedwater flow 10.17 E6 lbm/hr (should have used compensated FW flow 10.345 E6 lbm/hr). The correct Power Calculation is 67.5 to 68.5% (not 66.9%).
Required Materials:	RO's completed STS SE-002 (rev 26), MANUAL CALCULATION OF REACTOR THERMAL POWER.
General References:	STS SE-002, MANUAL CALCULATION OF REACTOR THERMAL POWER.
Handouts:	RO's completed STS SE-002, MANUAL CALCULATION OF REACTOR THERMAL POWER.

Initiating Cue:	Document on STS SE-002 or the cue sheet the following: 1. Approve / Disapprove the RO's work for completeness and correctness. 2. Any errors found. 3. Complete your review through STS SE-002 step 8.9.2.1
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	25 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	Key has been provided with all corrected values highlighted in yellow.
	Performance Step: 1 Attachment B [A]	Calculate total average feedwater flow.
	Standard:	Applicant calculated total feedwater flow at 10.18×10^6 lbm/hr.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 2 Attachment B [C]	Calculate average feedwater temperature.
	Standard:	Applicant calculated average feedwater temperature at 405°F.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 3 Attachment B [D]	Calculate total average S/G pressure.
	Standard:	Applicant calculated total average S/G pressure at 984.7 psia.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 4 Attachment B [E]	Calculate average S/G blowdown.
	Standard:	Applicant calculated average S/G blowdown at 126.28 klbm/hr.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	If asked Examiner informs applicant that information needed to perform calculation for the NI's is in the packet.
	Performance Step: 5 Attachment B [F, G, H, I]	Calculate average NI power per quadrant.
	Standard:	Applicant calculated average NI power per quadrant at: NI 41 – 66.4 NI 42 – 67.6 NI 43 – 67.7 NI 44 – 66.4
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 6 Attachment C.1.1	Determine feedwater density from Attachment F based on average feedwater temperature.
	Standard:	Applicant calculated feedwater density from Attachment F at 53.719.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 7 Attachment C.1.2	Determine density correction factor.
	Standard:	Applicant calculated density correction factor at 1.0172.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 8 Attachment C.1.3	Determine compensated feedwater flow.
	Standard:	Applicant calculated compensated feedwater flow at 10.355.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Range is from 1193.3 to 1193.7 and 654.2 and 652.3 due to rounding on Attachment.
	Performance Step: 9 Attachment C.2.1	Determine steam enthalpy and latent heat of vaporization from Attachment G based on average S/G pressure.
	Standard:	Applicant determined steam enthalpy and latent heat of vaporization from Attachment G based on average S/G pressure at 1193.5 and 653.25 respectively .
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Range is from 375.90 to 386.72 due to rounding on Attachment.
	Performance Step: 10 Attachment C.2.2	Determine feedwater enthalpy from the Attachment H based on average feedwater temperature.
	Standard:	Applicant determined feedwater enthalpy from the Attachment H based on average feedwater temperature at 381.3.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Range is from 806.58 to 817.8 due to rounding on Attachment.
	Performance Step: 11 Attachment C.2.3	Determine heat transfer.
	Standard:	Applicant determined heat transfer at 812.2.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 12 Attachment C.3	Determine S/G blowdown correction.
	Standard:	Applicant determined S/G blowdown correction at 0.678.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Range is from 67.5 to 68.5 due to rounding on Attachment.
*	Performance Step: 13 Attachment C.4 Alternate Path Step	Calculate power.
	Standard:	Applicant calculated power at 68.0 and corrects Attachment C.4.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Range is from 1.1% to 2.1% due to rounding in the previous step
*	Performance Step: 14 Attachment E from step 8.9.2.1	Calculate calorimetric difference AND determine SAT or UNSAT.
	Standard:	Applicant calculated calorimetric difference at 1.6% and determined UNSAT and corrects Attachment E from step 8.9.2.1.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 17	Approve / Disapprove RO's work for STS SE-002, MANUAL CALCULATION OF REACTOR THERMAL POWER.
	Standard:	Disapproves STS SE-002, MANUAL CALCULATION OF REACTOR THERMAL POWER paperwork.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM IS COMPLETE.
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STOP TIME: _____

Job Performance Measure No.:	S.A.2					
Examinee's Name:						
Examiner's Name:						
Date Performed:						
Facility Evaluator:						
Number of Attempts:						
Time to Complete:						
<u>Question Documentation:</u>						
Question:						
Response:						
Result:		SAT			UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	You are the Control Room Supervisor. The Reactor Operator (RO) has completed STS SE-002, MANUAL CALCULATION OF REACTOR THERMAL POWER through step 9.1. The RO reports no NI adjustments per the procedure. STS SE-001, POWER RANGE ADJUSTMENT TO CALORIMETRIC, calculated power results are 66.4% power. A personal computer is not available.
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INITIATING CUE:	<p>Document on STS SE-002 or the cue sheet the following:</p> <ol style="list-style-type: none">1. Approve / Disapprove the RO's work for completeness and correctness.2. Any errors found.3. Complete your review through STS SE-002 step 8.9.2.1
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Approve / Disapprove

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Review QPTR calculation	JPM No.:	S.A.3
K/A Reference:	2.2.12 Knowledge of surveillance procedures. (4.1) 2.2.42 Ability to recognize system parameters that are entry level condition for TS. (4.6)		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	X	Simulator	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	The STA has completed STS RE-012, QPTR DETERMINATION. NPIS is out of service. Reactor engineering will not be performing a flux map.
Task Standard:	<p>Applicant corrected math errors as follows:</p> <p>Step 8.4.4.2 average lower normalized current wrong corrected to 245.330.</p> <p>Step 8.4.5 upper tilts wrong corrected to 1.078, 0.969, 1.034, and 0.919 respectively.</p> <p>Step 8.4.6 lower tilt values all wrong due to wrong average number used. Corrected to 1.099, 0.955, 0.997, and 0.949 respectively.</p> <p>Step 8.4.7 maximum radial flux tilt wrong. Corrected to 1.099.</p> <p>Applicant applied TS as follows based on QPTR results:</p> <p>TS 3.2.4 applies with the following items:</p> <p>A1 – reduced RTP to $\leq 70.3\%$</p> <p>$9.9 \times 3 = 29.7$ so $100\% - 29.7\% = 70.3\%$</p> <p>A4 – reduced power range neutron flux high trip setpoints to $\leq 79.3\%$</p> <p>$9.9 \times 3 = 29.7$ so $109\% - 29.7\% = 79.3\%$</p>

Required Materials:	Completed STS RE-012 (rev 12), QPTR DETERMINATION, WCRX-25 (rev 4), CURVES AND TABLES REFERENCE MANUAL, TS, calculator.
General References:	STS RE-012, QPTR DETERMINATION, WCRX-25, CURVES AND TABLES REFERENCE MANUAL, TS
Handouts:	Completed STS RE-012, QPTR DETERMINATION, calculator
Initiating Cue:	You are the CRS. Review the STA's STS RE-012, QPTR DETERMINATION, for completeness and errors. Document any items on the cue sheet or on STS RE-012, QPTR DETERMINATION. Record any T.S action statements that apply (if any). Include values as appropriate.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	15 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	All corrected values are located on the key highlighted in yellow. Correct values are not listed in the JPM.
	Performance Step: 1	Review the STS RE-012, QPTR DETERMINATION, to determine completeness and errors.
	Standard:	Applicant reviewed STS RE-012 for errors.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 2 8.4.4.2	Determine if all number blanks are complete and correct without any math errors.
	Standard:	Applicant determined the following errors and documented: Step 8.4.4.2 average lower normalized current wrong Corrected to 245.330.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 3 8.4.5	Determine if all number blanks are complete and correct without any math errors.
	Standard:	Applicant determined the following errors and documented: Step 8.4.5 upper tilts wrong Corrected to 1.078, 0.969, 1.034, and 0.919 respectively.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 3 8.4.6	Determine if all number blanks are complete and correct without any math errors.
	Standard:	Applicant determined the following errors and documented: Step 8.4.6 lower tilt values all wrong due to wrong average number used. Corrected to 1.099, 0.955, 0.997, and 0.949 respectively.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 4 8.4.7	Determine if all number blanks are complete and correct without any math errors.
	Standard:	Applicant determined the following errors and documented: Step 8.4.7 maximum radial flux tilt wrong. Corrected to 1.099.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 5 8.6.2.1	Review TS for any implications based on findings with QPTR calculation.
	Standard:	Applicant determined TS 3.2.4 applies with the following items: A1 – reduced RTP to $\leq 70.3\%$ $9.9 \times 3 = 29.7$ so $100\% - 29.7\% = 70.3\%$ A4 – reduced power range neutron flux high trip setpoints to $\leq 79.3\%$ $9.9 \times 3 = 29.7$ so $109\% - 29.7\% = 79.3\%$
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM IS COMPLETE.
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STOP TIME: _____

Job Performance Measure No.:	S.A.3				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	The STA has completed STS RE-012, QPTR DETERMINATION. NPIS is out of service. Reactor engineering will not be performing a flux map.
INITIATING CUE:	<p>You are the CRS. Review the STA's STS RE-012, QPTR DETERMINATION, for completeness and errors.</p> <p>Document any items on the cue sheet or on STS RE-012, QPTR DETERMINATION.</p> <p>Record any T.S action statements that apply (if any). Include values as appropriate.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Approve containment purge permit for restart	JPM No.:	S.A.4
K/A Reference:	2.3.6 Ability to approve release permits. (3.8) 2.3.11 Ability to control radiation releases. (4.3)		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	X	Simulator	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	The Unit is in MODE 6 for a refueling outage. Health Physics has asked the CRS to restart a containment purge that was previously stopped.
Task Standard:	Applicant determined the containment purge release permit can NOT be used based on the following: The noble gas reading of 1.42 e-5 $\mu\text{Ci/cc}$ from GTG323 is over the limit for restart ($1.14 \text{ e-}5 \times 1.2 = 1.37 \text{ e-}5 \text{ max}$).
Required Materials:	Completed containment purge release permit APF 07B-001-009, calculator.
General References:	AP 07B-001, rev 19 RADIOACTIVE RELEASES, AI 07B-024, rev 16 INSTRUCTIONS FOR CONTAINMENT PURGE PERMITS.
Handouts:	Completed containment purge release permit APF 07B-001-009, calculator

Initiating Cue:	<p>You are the CRS. Review the containment purge permit to determine if a purge can be restarted using the same permit. Document ALL errors found AND your determination on the cue sheet or on the APF 07B-001-09, CONTAINMENT PURGE RELEASE PERMIT.</p> <p>The current date and time is 04/11/2013 @ 1400.</p> <p>Current containment atmospheric monitor readings from RM-11R are:</p> <p>GT RE-31, Containment Atmosphere Containment Particulate Channel, GTP311: 6.55 e-016 $\mu\text{Ci/cc}$ Containment Iodine Channel, GTI312: 3.12 e-015 $\mu\text{Ci/cc}$ Containment Noble Gas Channel, GTG313: 5.06 e-06 $\mu\text{Ci/cc}$</p> <p>GT RE-32, Containment Atmosphere Containment Particulate Channel, GTP321: 6.33 e-012 $\mu\text{Ci/cc}$ Containment Iodine Channel, GTI322: 2.12 e-013 $\mu\text{Ci/cc}$ Containment Noble Gas Channel, GTG323: 1.42 e-05 $\mu\text{Ci/cc}$</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	10 minutes

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	A key has been provided with corrections highlighted in yellow.
	Performance Step: 1	Review the current APF 07B-001-09, CONTAINMENT PURGE RELEASE PERMIT, to determine if can be used to restart a purge.
	Standard:	Applicant reviewed the current APF 07B-001-09, CONTAINMENT PURGE RELEASE PERMIT, and determined it can NOT be used to restart a purge.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	The following steps can be completed in any order.
	Performance Step: 2 AP 07B-001 step 6.2.4.4 second asterisk	Determine if purge restart can be completed with the current permit based on expiration time.
	Standard:	Applicant determined the current permit has NOT expired as of 04/11/2013 @ 1400. (permit expires at 4/11/2013 at 2000)
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	The following steps can be completed in any order.
	Performance Step: 3 AP 07B-001 step 6.2.4.6.b first bullet	Determine if purge restart can be completed with the current permit based on current gas concentration readings in containment.
	Standard:	Applicant determined the current reading from GTG313 was acceptable. 5.06 e-6 μ Ci/cc (limit of 5.28 e-6 μ Ci/cc) (4.4 e-6 X 1.2 = 5.28 e-6 max)
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	The following steps can be completed in any order.
*	Performance Step: 3 AP 07B-001 step 6.2.4.6.b first bullet	Determine if purge restart can be completed with the current permit based on current gas concentration readings in containment.
	Standard:	Applicant determined the current reading from GTG323 was not acceptable. 1.42 e-5 $\mu\text{Ci/cc}$ was too high for restart (limit of 1.37 e-5 $\mu\text{Ci/cc}$) (1.14 e-5 \times 1.2 = 1.37 e-5 max)
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM IS COMPLETE.
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STOP TIME: _____

Job Performance Measure No.:	S.A.4				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>The Unit is in MODE 6 for a refueling outage.</p> <p>Health Physics has asked the CRS to restart a containment purge that was previously stopped.</p>												
INITIATING CUE:	<p>You are the CRS. Review the containment purge permit to determine if a purge can be restarted using the same permit. Document ALL errors found AND your determination on the cue sheet or on the APF 07B-001-09, CONTAINMENT PURGE RELEASE PERMIT.</p> <p>The current date and time is 04/11/2013 @ 1400.</p> <p>Current containment atmospheric monitor readings from RM-11R are:</p> <p>GT RE-31, Containment Atmosphere</p> <table><tr><td>Containment Particulate Channel,</td><td>GTP311: 6.55 e-016 $\mu\text{Ci/cc}$</td></tr><tr><td>Containment Iodine Channel,</td><td>GTI312: 3.12 e-015 $\mu\text{Ci/cc}$</td></tr><tr><td>Containment Noble Gas Channel,</td><td>GTG313: 5.06 e-06 $\mu\text{Ci/cc}$</td></tr></table> <p>GT RE-32, Containment Atmosphere</p> <table><tr><td>Containment Particulate Channel,</td><td>GTP321: 6.33 e-012 $\mu\text{Ci/cc}$</td></tr><tr><td>Containment Iodine Channel,</td><td>GTI322: 2.12 e-013 $\mu\text{Ci/cc}$</td></tr><tr><td>Containment Noble Gas Channel,</td><td>GTG323: 1.42 e-05 $\mu\text{Ci/cc}$</td></tr></table>	Containment Particulate Channel,	GTP311: 6.55 e-016 $\mu\text{Ci/cc}$	Containment Iodine Channel,	GTI312: 3.12 e-015 $\mu\text{Ci/cc}$	Containment Noble Gas Channel,	GTG313: 5.06 e-06 $\mu\text{Ci/cc}$	Containment Particulate Channel,	GTP321: 6.33 e-012 $\mu\text{Ci/cc}$	Containment Iodine Channel,	GTI322: 2.12 e-013 $\mu\text{Ci/cc}$	Containment Noble Gas Channel,	GTG323: 1.42 e-05 $\mu\text{Ci/cc}$
Containment Particulate Channel,	GTP311: 6.55 e-016 $\mu\text{Ci/cc}$												
Containment Iodine Channel,	GTI312: 3.12 e-015 $\mu\text{Ci/cc}$												
Containment Noble Gas Channel,	GTG313: 5.06 e-06 $\mu\text{Ci/cc}$												
Containment Particulate Channel,	GTP321: 6.33 e-012 $\mu\text{Ci/cc}$												
Containment Iodine Channel,	GTI322: 2.12 e-013 $\mu\text{Ci/cc}$												
Containment Noble Gas Channel,	GTG323: 1.42 e-05 $\mu\text{Ci/cc}$												

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	Classify an Event	JPM No.:	S.A.5
K/A Reference:	2.4.41 Knowledge of the emergency action level thresholds and classifications. (4.6) 2.4.44 Knowledge of emergency plan protective action recommendations. (4.4)		

Examinee:				NRC Examiner:			
Facility Evaluator:				Date:			
<u>Method of testing:</u>							
Simulated Performance:					Actual Performance:		X
	Classroom		Simulator	X	Plant		

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	You are the Shift Manager.
Task Standard:	Upon completion of this JPM, the Applicant correctly completed classification within 15 minutes as to 2-SGTF 1,2,9,10,11 – SAE and documented on the cue sheet.
Required Materials:	APF 06-002-01 (rev 16), EMERGENCY ACTION LEVELS IC 30, File S-012

General References:	AP 06-002 (rev 14), RADIOLOGICAL EMERGENCY RESPONSE PLAN EPP 06-001 (rev 17), CONTROL ROOM OPERATIONS EPP 06-005 (rev 6), EMERGENCY CLASSIFICATION EPP 06-006 (rev 8), PROTECTIVE ACTION RECOMMENDATIONS APF 06-002-01 (rev 16), EMERGENCY ACTION LEVELS EPF 06-007-01 (rev 11), WCGS EMERGENCY NOTIFICATION 10 CFR 50, APPENDIX E 4 (CONTENT OF EMERGENCY PLAN), C. 2 NEI 99-02 (rev 6), REGULATORY ASSESSMENT PERFORMANCE INDICATOR GUIDELINE, Section 2.4, Emergency Preparedness Cornerstone
Handouts:	Notepad; APF 06-002-01, EMERGENCY ACTION LEVELS, EPP 06-006, PROTECTIVE ACTION RECOMMENDATIONS
Initiating Cue:	<p>This is a Time Critical Job Performance Measure (JPM).</p> <p>You will witness an event occur. You may take notes and use all references available to you in order to classify the event in accordance with the E-Plan.</p> <p>A minimal amount of operator actions, such as tripping the reactor, initiating safety injection, throttling AFW, etc, will occur automatically during the event. The simulator will freeze after sufficient time to classify the event has elapsed. The classification clock begins when plant conditions indicate that a classifiable event is in progress.</p> <p>NPIS is available for diagnosis. You will have a designated NPIS terminal to use for diagnosis. When Classification completed, provide the Examiner with your Classification Time for verification.</p> <p>Critical Safety Function Status Trees on NPIS are accurate unless the examiner informs you otherwise.</p>
Time Critical Task: (Yes or No)	Yes
Alternate Success Path: (Yes or No)	No
Validation Time:	15 minutes

Simulator Operator actions: IC-30 with horns off

When Examiner is ready: RUN Scenario File "S-012.scn"

;S-012 ;MSIV "A" fails open ICM vmodABHV0014 t:1 ;Steam line break (loop A) outside CTMT IMF mAB04A f:4e+006 d:120 ;SGTR on SG A IMF mBB02A f:700 r:30 ; Trip RCPs @ 1400 psig {bbp0403<1350} IMF mBB03A i:-1 f:-1 {bbp0403<1350} IMF mBB03B i:-1 f:-1 {bbp0403<1350} IMF mBB03C i:-1 f:-1 {bbp0403<1350} IMF mBB03D i:-1 f:-1 ; Trip Rx 01:56.650 IOR P03016C f:0 01:56.700 IOR P03016A f:1 01:56.700 IOR P03016 f:1 01:57.650 IOR P03016A f:0 01:57.650 IOR P03016C f:1 01:57.650 IOR P03016 f:-1 ; Initiate SI	01:59.650 IOR P01012A f:1 02:00.850 IOR P01012A f:0 02:01.950 IOR P01011A f:1 02:03.450 IOR P01011A f:0 ; All Close MSIVs 02:27.700 IOR P06070A f:1 02:31.500 IOR P06070A f:0 ; Isolate "A" AFW 02:49 ICM vmodALHV0008 t:4 f:0 d:0 r:0 02:49 ICM vmodALHV0007 t:4 f:0 d:0 r:0 ; Throttle AFW to unaffected S/Gs 02:49 ICM vmodALHV0006 t:4 f:0 d:0 r:10 02:49 ICM vmodALHV0010 t:4 f:0 d:10 r:10 02:49 ICM vmodALHV0012 t:4 f:0 d:10 r:10 02:49 ICM vmodALHV0005 t:4 f:0.4 d:0 r:0 02:49 ICM vmodALHV0009 t:4 f:0.4 d:0 r:0 02:49 ICM vmodALHV0011 t:4 f:0.4 d:0 r:0 03:00 COR 17:00 Freeze ; End File
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Floor actions: When the scenario file trips the Rx, initiates SI, closes the MSIVs and throttles AFW flow, then inform the Applicant that the crew tripped the Rx, initiated SI and all closed the MSIVs. Inform the candidates that "A" MSIV will not close. Inform the Applicants that AFW is throttled. When RCS pressure is < 1400 psig, then inform the Applicants that the crew has tripped the RCPs.

Announcements:

- ☐ Rx trip
- ☐ Safety Injection
- ☐ MSIVs closed
- ☐ MSIV 'A' will not close
- ☐ AFW throttled
- ☐ RCPs are tripped

Time 0 = _____

T=0 when tube leakage exceeds 150 GPD as indicated by PZR level lowering.

(Denote Critical Steps with an asterisk)

START TIME: _____

	Examiner NOTE:	T=0 when tube leakage exceeds 150 GPD as indicated by PZR level lowering.
*	Performance Step: 1	Classify the event.
	Standard:	Applicant classified the event as 2-SGTF 1,2,9,10,11 – SAE within 15 minutes of T=0 and informed the Examiner.
	Cue:	When Applicant informs Examiner of classification inform JPM complete.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM IS COMPLETE.
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STOP TIME: _____

Job Performance Measure No.:	S.A.5				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	You are the Shift Manager.
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INITIATING CUE:	<p>This is a Time Critical Job Performance Measure (JPM).</p> <p>You will witness an event occur. You may take notes and use all references available to you in order to classify the event in accordance with the E-Plan.</p> <p>A minimal amount of operator actions, such as tripping the reactor, initiating safety injection, throttling AFW, etc, will occur automatically during the event. The simulator will freeze after sufficient time to classify the event has elapsed. The classification clock begins when plant conditions indicate that a classifiable event is in progress.</p> <p>NPIS is available for diagnosis. You will have a designated NPIS terminal to use for diagnosis. When Classification completed, provide the Examiner with your Classification Time for verification.</p> <p>Critical Safety Function Status Trees on NPIS are accurate unless the examiner informs you otherwise.</p>
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When classification completed, fill in the time and show it to an Examiner.

Emergency Classification AND Time: _____

1. For Examiner purpose – verify the following as completed.

Classification
time verified

Facility: Wolf CreekDate of Examination: July 2013Exam Level: RO ☒ SRO-I ☒ SRO-U ☐Operating Test Number: 1**RO-only JPM in bold**Control Room Systems[@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. (S1) (003.A2.11) Dropped Control Rod During Rod Parking	N,S	1
b. (S2) (004.A3.03) Letdown HX High Temperature Divert	N,A,S	2
c. (S3) (006.A3.01) Isolate Accumulators following a LOCA	D,A,S	3
d. (S4) (003.A4.06) Start a Reactor Coolant Pump (Note: RO only)	D,S,L	4P
e. (S5) (045.A4.02) Synchronize Main Generator to the Grid	M,S,L	4S
f. (S6) (027.A4.03) Start Containment Atmosphere Control Fan	N,A,S	5
g. (S7) (073.A4.02) Place Unit Vent Monitor in Accident Mode of Operation	N,S	7
h. (S8) (008.A2.01) Transfer CCW System Service Loop	D,A,S	8

In-Plant Systems[@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i. (P1) (076.AK3.06) Place Cation Bed Demin in Service for High RCS Activity	D,R	1
j. (P2) (E09.EA1.3) Natural Circulation –Depressurize Inactive SG	N,R,A,E	4S
k. (P3) (057.AK3.01) Align 120VAC Vital Bus to SOLA Transformer	D,A,E	6

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	<u>Place cation bed demineralizer in service</u>	JPM No.:	<u>P1</u>
K/A Reference:	<p>076 AK3.06 Knowledge of reasons for the following responses as they apply to the High Reactor Coolant Activity: Actions contained in EOP for high reactor coolant activity. 3.2/3.8</p> <p>076 AA2.02 Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity: Corrective actions required for high fission product activity in RCS. 2.8/3.4</p>		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:	X	Actual Performance:	
Classroom		Simulator	
		Plant	X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	You are the spare Reactor Operator. The plant is in MODE 1 with the Normal Charging Pump (NCP) inservice. The Control Room is performing OFN BB-006, HIGH REACTOR COOLANT ACTIVITY. Chemistry Operations Action Form is in the Control Room requesting the cation bed demineralizer is placed into service.
Task Standard:	The Applicant placed the cation bed demineralizer in service per section 6.1 of SYS BG-202, OPERATION OF THE CVCS CATION BED DEMIN.
Required Materials:	SYS BG-202, OPERATION OF THE CVCS CATION BED DEMIN
General References:	SYS BG-202, rev 27, OPERATION OF THE CVCS CATION BED DEMIN.
Handouts:	SYS BG-202, OPERATION OF THE CVCS CATION BED DEMIN

Initiating Cue:	<p>Per OFN BB-006, HIGH REACTOR COOLANT ACTIVITY, step 6c, the Control Room Supervisor directs you to place the cation bed demineralizer into service by performing section 6.1 of SYS BG-202, OPERATION OF THE CVCS CATION BED DEMIN.</p> <p>The prerequisites have been completed.</p> <p>COAF generated by Chemistry – run the CVCS cation bed for 40 minutes at 120 gpm letdown.</p> <p>The cation bed demineralizer has previously been used and RCS boron concentration has not changed more than 20 ppm since the last time the bed has been inservice.</p> <p>Do not operate any components in the plant. Upon arrival at a component, describe what you expect to see, what you expect to do and what you expect to happen.</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	25 minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide the Information Only copy of SYS BG-202, OPERATION OF THE CVCS CATION BED DEMIN to Applicant.

START TIME: _____

	Examiner NOTE:	SYS BG-202, OPERATION OF THE CVCS CATION BED DEMIN, section 6.1, Placing Cation Bed Demineralizer Inservice. Pay attention to Rad Postings.
	Performance Step: 1 6.1.1	(p) IF any of the following conditions exist, THEN adjust boron concentration of the Cation Bed in accordance with section 6.3, prior to placing inservice. <ul style="list-style-type: none"> * Cation bed demin is new and has not been borated to current RCS boron concentration * RCS boron concentration has changed more than 20 ppm since the last time that the Cation Bed demin was inservice
	Standard:	Applicant recognized from the initiating cue that this step is NA.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 2 6.1.2	Ensure CATION BED DEMIN INLET ISOLATION valve is open. <ul style="list-style-type: none"> • BG-8516 – OPEN
	Standard:	Applicant located valve BG-8516 in the filter gallery, 2000' Auxiliary Building, on the upper deck level, northeast corner. Applicant checked the reach rod position indicator in the open position and/or the handwheel did not turn in the counter clockwise direction.
	Cue:	If needed: The handwheel will not turn in the counter clockwise direction.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 3 6.1.3	Open CATION BED DEMIN OUTLET ISOLATION valve. <ul style="list-style-type: none"> • BG-8518 – OPEN
	Standard:	Applicant located valve BG-8518 in the valve cubicle, northeast side. Applicant opened the valve by turning the handwheel in the Counter Clockwise (CCW) direction.
	Cue:	CCW direction cue: handwheel is turning. When valve open: handwheel stops movement in CCW direction If Clockwise (CW) direction cue: handwheel does not turn.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE	Applicant may go down to the 2000' level, inside the Mixed bed FBG03B valve room, and verify the globe valve stem is in the down position.
*	Performance Step: 4 6.1.4	Close MIXED BED DEMIN COMBINED OUTLET VALVE. <ul style="list-style-type: none"> • BG-8514 – CLOSED
	Standard:	Applicant located BG-8514 in the filter gallery, upper deck, northeast center. Applicant closed the reach rod valve by turning the handwheel in the Clockwise (CW) direction. Applicant verified the position indicator in the closed position.
	Cue:	CW direction cue: handwheel is turning. When valve closed: handwheel stops movement in CW direction. If Counter Clockwise (CCW) direction cue: handwheel does not turn.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	NOTE: Flow read at BG FI-136 should correspond to Letdown flow as read on BG FI-132 in the Control Room.
	Performance Step: 5 6.1.5.1	Record the following data: 1. Time Cation Bed placed inservice. Time: _____
	Standard:	Applicant recorded time.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 6 6.1.5.2	Record the following data: 2. Local Cation Bed flow. <ul style="list-style-type: none">• BG FI-136 flow _____
	Standard:	Applicant located flow meter BG FI-136 on the south wall of the hallway outside filter alley, left of the normal entrance door. Applicant recorded flow.
	Cue:	At BG FI-136, using a pen/stylus, indicate ~120 gpm on meter.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 7 6.1.5.3	Record the following data: 3. Cation Bed dP. • BG PDI-135 dP _____
	Standard:	Applicant located BG PDI-135 on the left side of the normal entrance door to filter alley, on the 2000' level of the Auxiliary Building. Applicant recorded dP.
	Cue:	At BG PDI-135, using a pen/stylus, indicate ~9 psid.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	CAUTION: Normal letdown flow to demineralizers is a nominal 120 gpm with a maximum inlet temperature is 130°F. In Modes 5, 6 or defueled, letdown flow may be increased up to 130 gpm, as long as the dP across the demineralizer bed is frequently monitored to ensure it does not exceed 25 psid.
	Performance Step: 8 6.1.6	Contact the Control Room to verify Letdown Heat Exchanger Outlet Flow less than or equal to 130 gpm and to inform them of the time the cation bed was placed inservice.
	Standard:	Applicant communicated with the Control Room. 1. Requested verification that letdown heat exchanger outlet flow is less than or equal to 130 gpm. 2. Reported the time the cation bed was placed inservice.
	Cue:	1. Letdown heat exchanger outlet flow is 120 gpm. 2. Acknowledge report (time the cation bed placed into service).
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 9 6.1.7	Section 6.1, Placing Cation Bed Demineralizer Inservice, complete.
	Standard:	Applicant initialed and dated step.
	Cue:	JPM complete.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM COMPLETE. Section 6.1, Placing Cation Bed Demineralizer Inservice, complete.
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STOP TIME: _____

Job Performance Measure No.:	P1				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>You are the spare Reactor Operator. The plant is in MODE 1 with the Normal Charging Pump (NCP) inservice. The Control Room is performing OFN BB-006, HIGH REACTOR COOLANT ACTIVITY. Chemistry Operations Action Form is in the Control Room requesting the cation bed demineralizer is placed into service.</p>
INITIATING CUE:	<p>Per OFN BB-006, HIGH REACTOR COOLANT ACTIVITY, step 6c, the Control Room Supervisor directs you to place the cation bed demineralizer into service by performing section 6.1 of SYS BG-202, OPERATION OF THE CVCS CATION BED DEMIN.</p> <p>The prerequisites have been completed.</p> <p>COAF generated by Chemistry – run the CVCS cation bed for 40 minutes at 120 gpm letdown.</p> <p>The cation bed demineralizer has previously been used and RCS boron concentration has not changed more than 20 ppm since the last time the bed has been inservice.</p> <p>Do not operate any components in the plant. Upon arrival at a component, describe what you expect to see, what you expect to do and what you expect to happen.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	<u>Natural Circ – depressurize inactive steam generator</u>	JPM No.:	<u>P2</u>
K/A Reference:	E09 EA1.3 Ability to operate and/or manipulate the following as they apply to the Natural Circulation Operations: Desired operating results during abnormal and emergency situations. 3.5/3.8		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:	X	Actual Performance:	
Classroom		Simulator	
		Plant	X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	<p>You are the spare Reactor Operator. Unit is performing a natural circ cooldown per EMG ES-04, NATURAL CIRCULATION.</p> <p>Steam Generator 'B' is inactive and must be depressurized.</p> <p>Steam Generator 'B' Atmospheric Relief Valve (ARV) was manually opened from the Control Room and ALL steam paths were previously isolated per Attachment D, INACTIVE LOOP STEAM PATH ISOLATION AND STEAMING, steps D1 through D7.</p> <p>The TDAFW pump is operating.</p>
Task Standard:	Applicant locally opened MSIV bypass valve (AB HV-18) and Main Steam Loop 2 to AFW Pump Turb HV-5 Inlet Iso valve, AB-V085, in order to depressurize inactive Steam Generator 'B'.
Required Materials:	EMG ES-04, rev 16, NATURAL CIRCULATION
General References:	EMG ES-04, NATURAL CIRCULATION
Handouts:	EMG ES-04, NATURAL CIRCULATION, Attachment D, INACTIVE LOOP STEAM PATH ISOLATION AND STEAMING, step D8

Initiating Cue:	The Control Room Supervisor directs you to perform EMG ES-04, NATURAL CIRCULATION, Attachment D, INACTIVE LOOP STEAM PATH ISOLATION AND STEAMING, step D8 for Steam Generator 'B'. Do not operate any components in the plant. Upon arrival at a component, describe what you expect to see, what you expect to do and what you expect to happen.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	30 minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide the Information Only copy of EMG ES-04, NATURAL CIRCULATION, Attachment D, INACTIVE LOOP STEAM PATH ISOLATION AND STEAMING, step D8, to Applicant.

START TIME: _____

	Examiner NOTE:	<p>EMG ES-04, NATURAL CIRCULATION, Attachment D, INACTIVE LOOP STEAM PATH ISOLATION AND STEAMING, step D8.</p> <p>AB-V040 is a normally locked open valve. For purposes of this JPM, AB-V040 was closed – per step D3 RNO.</p> <p>NOTE prior to step D8 does not apply.</p>
	<p>Performance Step: 1 D8. a. second asterisk</p> <p>Alternate Path Step</p>	<p>Check S/G ARVs Will Be Used To Decrease Inactive Loop(s) S/G Pressure:</p> <p>a. Ensure S/G ARV local isolation valve is open.</p> <p>* AB-V040 For S/G B (MAIN STEAM ENCLOSURE ABOVE GRATING).</p>
	Standard:	<p>Applicant located AB-V040 in Main Steam Enclosure Room above the grating.</p> <p>Applicant rotated handwheel in Counter clockwise (CCW) direction to open AB-V040.</p> <p>After cue: Transitioned to RNO column.</p>
	Cue:	Handwheel does not move in CCW direction.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	If asked: Valve position is as seen.
*	Performance Step: 2 D8. RNO 1. second asterisk	Perform the following: 1. IF using a MSIV Bypass Valve, THEN locally open: * AB HV-18 (MAIN STEAM ENCLOSURE ABOVE GRATING)
	Standard:	Applicant located AB HV-18 in Main Steam Enclosure Room above the grating. Applicant removed locking tabs. Applicant rotated handwheel in Counter clockwise (CCW) direction to open AB HV-18.
	Cue:	Locking Tabs removed, Handwheel rotates in CCW direction.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	There is position indication on the (North) back side.

	Examiner NOTE:	AB-V085 is a normally locked open valve. For purposes of this JPM, AB-V085 was closed – recall Initial Conditions.
*	Performance Step: 3 D8. RNO 2. first asterisk	IF the TDAFW is running AND RCS Loop(s) B or C are inactive AND require depressurization, THEN locally open: * AB-V085 For S/G B (MAIN STEAM ENCLOSURE BELOW GRATING)
	Standard:	Applicant located AB-V085 in Main Steam Enclosure Room below the grating. Applicant rotated handwheel in Counter clockwise (CCW) direction to open AB-V085.
	Cue:	Handwheel rotates in CCW direction, stem is rising.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 4	Applicant notifies Control Room that Attachment D, step D8 (D8 RNO) is complete.
	Standard:	Applicant notified Control Room that AB HV-18, MSIV Bypass Valve and AB-V085, Main Steam Loop 2 to AFW Pump Turb HV-5 Inlet Iso valve, have been opened.
	Cue:	Acknowledge report. JPM complete.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM COMPLETE. Reported to Control Room acknowledged AB HV-18 and AB-V085 are opened – Attachment D, step D8 completed.
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STOP TIME: _____

Job Performance Measure No.:	P2				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>You are the spare Reactor Operator. Unit is performing a natural circ cooldown per EMG ES-04, NATURAL CIRCULATION.</p> <p>Steam Generator 'B' is inactive and must be depressurized.</p> <p>Steam Generator 'B' Atmospheric Relief Valve (ARV) was manually opened from the Control Room and ALL steam paths were previously isolated per Attachment D, INACTIVE LOOP STEAM PATH ISOLATION AND STEAMING, steps D1 through D7.</p> <p>The TDAFW pump is operating.</p>
INITIATING CUE:	<p>The Control Room Supervisor directs you to perform EMG ES-04, NATURAL CIRCULATION, Attachment D, INACTIVE LOOP STEAM PATH ISOLATION AND STEAMING, step D8 for Steam Generator 'B'.</p> <p>Do not operate any components in the plant. Upon arrival at a component, describe what you expect to see, what you expect to do and what you expect to happen.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	<u>Align 120VAC vital bus to SOLA transformer</u>	JPM No.:	<u>P3</u>
K/A Reference:	057 AK3.01 Knowledge of the reasons for the following responses as they apply to the Loss of Vital AC Instrument Bus: Actions contained in EOP for loss of vital ac electrical instrument bus. 4.1/4.4		

Examinee:				NRC Examiner:			
Facility Evaluator:				Date:			
<u>Method of testing:</u>							
Simulated Performance:		X			Actual Performance:		
	Classroom		Simulator		Plant	X	

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	You are a spare Reactor Operator. The Plant is in MODE 3 with all items for entering MODE 2 complete. Annunciators "NN02 INST BUS UV" and "NN12 INV UV" are in alarm. The Reactor Operator has verified from OFN NN-021, LOSS OF 120 VAC INSTRUMENT BUS, that bus NN02 is de-energized.
Task Standard:	Applicant re-energized bus NN02 from the backup transformer (SOLA transformer) per steps B4 and B5 of OFN NN-021, LOSS OF VITAL 120 VAC INSTRUMENT BUS, Attachment B, LOSS OF VITAL INSTRUMENT BUS NN02 (WHITE TRAIN).
Required Materials:	OFN NN-021, rev 19 LOSS OF VITAL 120 VAC INSTRUMENT BUS
General References:	OFN NN-021, LOSS OF VITAL 120 VAC INSTRUMENT BUS
Handouts:	OFN NN-021, LOSS OF VITAL 120 VAC INSTRUMENT BUS, Attachment B, LOSS OF VITAL INSTRUMENT BUS NN02 (WHITE TRAIN)

Initiating Cue:	<p>The Control Room Supervisor directs you to locally restore power to BUS NN02 using OFN NN-021, LOSS OF VITAL 120 VAC INSTRUMENT BUS; complete the task starting at step B4. Contact the Control Room when task is complete.</p> <p>Do not operate any components in the plant. Upon arrival at a component, describe what you expect to see, what you expect to do and what you expect to happen.</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	25 minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide the Information Only copy of OFN NN-021, LOSS OF VITAL 120 VAC INSTRUMENT BUS, Attachment B, LOSS OF VITAL INSTRUMENT BUS NN02 (WHITE TRAIN), to the Applicant.

START TIME: _____

	Examiner NOTE:	OFN NN-021, LOSS OF VITAL 120 VAC INSTRUMENT BUS, Attachment B, LOSS OF VITAL INSTRUMENT BUS NN02 (WHITE TRAIN)
	Performance Step: 1 B4.a.	Locally Restore Normal Power To Bus NN02: a. Check NN02 Bus – NO APPARENT DAMAGE
	Standard:	At NN02, 2016' level of the Control Building, Applicant checked for indication physical damage (e.g. visual charring damage, odor of smoke or heat).
	Cue:	No damage is evident and no odor of smoke or heat exists.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Steps B1, B2 and B3 performed by Control Room.

	Examiner NOTE:	Meter: INVERTER AC VOLT 2VM (the one on the far right)
	Performance Step: 2 B4.b. Alternate Path Step	Check inverter NN12 output voltage – NORMAL
	Standard:	Applicant located inverter output voltmeter on NN12. Applicant determined voltmeter indicated 0 (NOT NORMAL). Applicant transitioned to RNO column.
	Cue:	At NN12, using a pen/stylus, inverter output voltmeter indicates ~0 volts. (or state 0 volts)
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 3 B4 RNO b.	Go to step B5.
	Standard:	Applicant transitioned to step B5.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 4 B5.a.	Align Backup Power TO Bus NN02: a. Close backup transformer XNN06 power supply breaker. <ul style="list-style-type: none"> NG02AFF3
	Standard:	Applicant located NG02AFF3, 2000' level of Control Building. Applicant rotated the operator up to the ON position to close the breaker.
	Cue:	At NG02AFF3, using a pen/stylus, operator indicates the ON position. (or state ON position)
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	If asked current breaker status BEFORE manipulation, Using the pen/stylus, breaker operator indicates OFF position.

	Performance Step: 5 B5.b.	Verify Backup Power Available White Light – LIT
	Standard:	At NN02, 2016' level of the Control Building, Applicant determined White light LIT.
	Cue:	At NN02, White light LIT.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Turbine Building watch normally carries the key. A spare key is also located in the Shift Manager's key box.
*	Performance Step: 6 B5.c.	Open Normal Feeder Breaker. <ul style="list-style-type: none"> NN0201
	Standard:	Applicant turned circuit breaker to OFF position to open breaker.
	Cue:	Using the pen/stylus, breaker operator indicates OFF position. (or state OFF position)
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	An alternate method to perform this task is to install the interlock key into the lock mechanism, rotate the key, and then slide the slider bar from NN0202 to NN0201. This action opens NN0201 breaker. It does not Close NN0202.

	Examiner NOTE:	Turbine Building watch normally carries the key. A spare key is also located in the Shift Manager's key box.
	Examiner NOTE:	Applicant may contact Control Room prior to closing the Alternate Feeder Breaker. If contacted, acknowledge report.
*	Performance Step: 7 B5.d.	Close Alternate Feeder Breaker. <ul style="list-style-type: none"> NN0202
	Standard:	Applicant located key for the key interlock. Applicant installed the interlock key into the lock mechanism and rotated. *Applicant moved the slider bar from NN0202 to NN0201. *Applicant turned circuit breaker to ON for NN0202 to close breaker.
	Cue:	If needed: Key in hand. If needed: Key in mechanism. Using the pen/stylus, breaker operator indicates ON position. (or state ON position)
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 8	Applicant contacts Control Room to inform them that steps B4 and B5 are complete. Bus NN02 is energized from the SOLA transformer (backup transformer).
	Standard:	Applicant contacted Control Room and informed of NN02 status.
	Cue:	If needed: Using pen/stylus, inverter output voltmeter indicates ~120 volts Acknowledge report. JPM complete.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM COMPLETE. Bus NN02 re-energized from the backup transformer (SOLA transformer).
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STOP TIME: _____

Job Performance Measure No.:	<u>P3</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>You are a spare Reactor Operator.</p> <p>The Plant is in MODE 3 with all items for entering MODE 2 complete.</p> <p>Annunciators “NN02 INST BUS UV” and “NN12 INV UV” are in alarm.</p> <p>The Reactor Operator has verified from OFN NN-021, LOSS OF 120 VAC INSTRUMENT BUS, that bus NN02 is de-energized.</p>
INITIATING CUE:	<p>The Control Room Supervisor directs you to locally restore power to BUS NN02 using OFN NN-021, LOSS OF VITAL 120 VAC INSTRUMENT BUS; complete the task starting at step B4.</p> <p>Contact the Control Room when task is complete.</p> <p>Do not operate any components in the plant. Upon arrival at a component, describe what you expect to see, what you expect to do and what you expect to happen.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	<u>Control Rod parking – dropped control rod</u>	JPM No.:	<u>S1</u>
K/A Reference:	001 A2.11: Ability to (a) predict the impacts of the following malfunctions or operations on the CRDS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Situations requiring a reactor trip. 4.4/4.7 003 AA1.03: Ability to operate an/or monitor the following as they apply to the Dropped Control Rod: Rod control switches. 3.6/3.3		

Examinee:				NRC Examiner:			
Facility Evaluator:				Date:			
<u>Method of testing:</u>							
Simulated Performance:			Actual Performance:		X		
	Classroom		Simulator	X	Plant		

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	You are the Reactor Operator. Unit is in MODE 1. STN SF-001, CONTROL ROD PARKING, is being performed. STS SF-001, CONTROL AND SHUTDOWN ROD OPERABILITY VERIFICATION, is not being performed in conjunction with this procedure. Flushes for Shutdown Banks 'A' through 'E' have been performed. Control Rod park position is not being changed.
Task Standard:	Applicant manipulated ROD BANK AUTO/MAN SEL, SE HS-9, from position CBA to MAN, stopping uncontrolled Control Bank 'A' insertion.

Required Materials:	<p>STN SF-001, CONTROL ROD PARKING</p> <p>Simulator Operator Instructions: IC 30, 100% power. Horns On. Ensure switch SE HS-9 in AUTO position. Ensure both files (S1 1 and rod-motion 2) have been loaded into the Simulator file directory. Run S1 1.scn file.</p> <p>SIMULATOR OPERATOR: Insert Key 1 prior to performance of the third flush.</p> <p>;S1 1 file: {Key[1]} scn rod-motion 2</p> <p>Rod-motion 2 file: ; uncontrolled rod motion when stepped in {x03i115i} IMF mSF06B f:0 {hwx03i123b} DMF mSF06B</p>
General References:	STN SF-001, rev 16, CONTROL ROD PARKING, AP 15C-003, rev 29, PROCEDURE USER'S GUIDE FOR ABNORMAL PLANT CONDITIONS (step 6.1.7)
Handouts:	STN SF-001, CONTROL ROD PARKING
Initiating Cue:	<p>The Control Room Supervisor directs you to flush Control Bank 'A' per step 8.1.1.6 of STN SF-001, CONTROL ROD PARKING.</p> <p>All prerequisites have been met.</p>
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	10 minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide the Information Only copy of STN SF-001, CONTROL ROD PARKING, to the Applicant.

START TIME: _____

	Examiner NOTE:	STN SF-001, CONTROL ROD PARKING, step 8.1.1.6
*	Performance Step: 1 8.1.1.6.a.1	Perform the following to flush Control Bank A: a. Perform the first flush for Control Bank A per the following: 1) Position ROD BANK AUTO/MAN SEL switch to Control Bank A. • SE HS-9 – CONTROL BANK A
	Standard:	Applicant manipulated SE HS-9 from AUTO (right) to CBA position.
	Cue:	If needed: Acknowledge manipulation.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Critical step: because the correct bank must be selected.

	Examiner NOTE:	Monitor Control Bank 'A' movement on Group Step Counters SC CB-A1 and SC CB-A2.
	Performance Step: 2 8.1.1.6.a.2	Using SF HS-2, MAN ROD CTRL, insert Control Bank A one step.
	Standard:	Applicant inserted Control Bank A one step using SF HS-2, MAN ROD CTRL.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 3 8.1.1.6.a.3	Using SF HS-2, MAN ROD CTRL, withdraw Control Bank A one step.
	Standard:	Applicant withdrew Control Bank A one step using SF HS-2, MAN ROD CTRL.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	First flush complete.

	Performance Step: 4 8.1.1.6.b.1	Perform the second flush for Control Bank A per the following: 1. Using SF-HS-2, MAN ROD CTRL, insert Control Bank A one step.
	Standard:	Applicant inserted Control Bank A one step using SF HS-2, MAN ROD CTRL.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 5 8.1.1.6.b.2	Using SF HS-2, MAN ROD CTRL, withdraw Control Bank A one step.
	Standard:	Applicant withdrew Control Bank A one step using SF HS-2, MAN ROD CTRL.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Second flush complete. SIMULATOR OPERATOR: Insert Key 1 prior to performance of the third flush.

	Performance Step: 6 8.1.1.6.c.1	Perform the third flush for Control Bank A per the following: 1. Using SF HS-2, MAN ROD CTRL, insert Control Bank A one step.
	Standard:	Applicant inserted Control Bank A one step using SF HS-2, MAN ROD CTRL. Applicant determined Control Bank 'A' continued to insert as determined by DRPI.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	<p>Once Applicant determined a Control Bank 'A' continued to insert, Applicant may directly manipulate SE HS-9, ROD BANK AUTO/MAN SEL, to MAN position.</p> <p>Per AP 15C-003 step 6.1.7, the Operator should take manual control when components are not performing correctly.</p> <p>It is a failure of the JPM if the Applicant allows Control Rod Bank 'A' to insert until Main Control Board alarm 00-081C, ROD BANK LOLO LIMIT, annunciates – CBA at ~208 steps.</p>
*	Performance Step: 7 8.1.1.6.c.1	Applicant determined Control Bank 'A' continued to insert as determined by DRPI.
	Standard:	<p>Applicant manipulated SE HS-9, ROD BANK AUTO/MAN SEL, from CBA to MAN position.</p> <p>Applicant verified Control Bank 'A' motion stopped.</p>
	Cue:	JPM complete.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM COMPLETE. Control Bank 'A' insertion stopped.
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STOP TIME: _____

Job Performance Measure No.:	<u>S1</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>You are the Reactor Operator. Unit is in MODE 1.</p> <p>STN SF-001, CONTROL ROD PARKING, is being performed.</p> <p>STS SF-001, CONTROL AND SHUTDOWN ROD OPERABILITY VERIFICATION, is not being performed in conjunction with this procedure.</p> <p>Flushes for Shutdown Banks 'A' through 'E' have been performed.</p> <p>Control Rod park position is not being changed.</p>
INITIATING CUE:	<p>The Control Room Supervisor directs you to flush Control Bank 'A' per step 8.1.1.6 of STN SF-001, CONTROL ROD PARKING.</p> <p>All prerequisites have been met.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	<u>Letdown Heat Exchanger Temperature High Divert</u>	JPM No.:	<u>S2</u>
K/A Reference:	004 A3.03 Ability to monitor automatic operation of the CVCS, including: Ion exchange bypass. 2.9/2.9 004 A4.05 Ability to manually operate and/or monitor in the control room: Letdown pressure and temperature control valves. 3.6/3.1		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	Simulator	X	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	You are the Reactor Operator. Unit is at 100%. ALR 00-039A, LTDN HX TEMP HI DIVERT is LIT.
Task Standard:	Applicant placed BG HIS-129 in VCT position and using BG TK-130 in manual, reduced Letdown Heat Exchanger Outlet Temperature to value between 110 F and 120 F.

Required Materials:	ALR 00-039A, LTDN HX TEMP HI DIVERT Simulator Operator: IC 311 (IC 30 with files included) – Run S2 and S8. Horns On. IC 30 - 100% power. Run file S2 1. When Examiner cues, insert Key 1. File S2 1 ; Fail BG TK-130 low in auto IMF mEG09A f:3 k:1 ; prevent auto swap of BG HIS-129 IOR P01030D f:1 {hwx01i105v} DOR P01030D
General References:	ALR 00-039A, rev 10, LTDN HX TEMP HI DIVERT
Handouts:	ALR 00-039A, LTDN HX TEMP HI DIVERT
Initiating Cue:	The Control Room Supervisor directs you to perform ALR 00-039A, LTDN HX TEMP HI DIVERT.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	15 minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide Information Only copy of ALR 00-039A, LTDN HX TEMP HI DIVERT to the Applicant.

START TIME: _____

	Examiner NOTE:	ALR 00-039A, LTDN HX TEMP HI DIVERT
	Performance Step: 1 1	Check Letdown Heat Exchanger Outlet Temperature – GREATER THAN 137°F <ul style="list-style-type: none"> • BG TI-130
	Standard:	Applicant checked Letdown Heat Exchanger Outlet Temperature on BG TI-130. <ul style="list-style-type: none"> • Temperature on BG TI-130 greater than 140 °F and rising.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 2 2	Check CVCS Demineralizer Inlet Divert Valve In VCT Position <ul style="list-style-type: none"> • BG HIS-129
	Alternate Path Step	
	Standard:	Applicant determined BG HIS-129 not in VCT position: DEMIN Red light LIT VCT Red light EXTINGUISHED Applicant transitioned to RNO.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 3 2 RNO	Place valve in VCT position.
	Standard:	Applicant depressed VCT pushbutton on BG HIS-129: VCT Red light LIT DEMIN Red light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 4 3	Check Annunciator 00-038A, LTDN REGEN HX TEMP HI - CLEAR
	Standard:	From Main Control Boards, Applicant determined alarm 038A was clear.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 5 4 Alternate Path Step	Check Letdown Heat Exchanger Outlet Temperature Control Valve responding properly <ul style="list-style-type: none"> • BG TK-130
	Standard:	Applicant determined BG TK-130 is not responding properly – it should be opening further in AUTO to control temperature. Applicant transitioned to RNO.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 6 4 RNO a.	Perform the following: a. Place valve in manual and establish temperature between 110 F and 120 F.
	Standard:	At BG TK-130: Applicant depressed MAN pushbutton. MAN: Red light LIT AUTO: Red light EXTINGUISHED Applicant depressed UP ARROW pushbutton to establish temperature, as read from BG TI-130, between 110 F and 120 F.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	As temperature reduces, Main Control Board alarms 039A and 039B clear. When temperature is between 110 F and 120 F, controller BG TK-130 meter readout is approximately 28% output.

	Performance Step: 7 5	Check Letdown Heat Exchanger Outlet Flow – LESS THAN 120 GPM <ul style="list-style-type: none">• BG FI-132 Applicant transitioned to RNO.
	Standard:	Using BG FI-132, Applicant determined ~120 gpm flow.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 8 5 RNO a.	Decrease letdown flow: a. Ensure correct orifice isolation valve lineup.
	Standard:	Applicant verified letdown orifice isolation valves were open: <ul style="list-style-type: none"> LTDN ORIFICE A VLV, BG HIS-8149AA Red light – LIT Green light – EXTINGUISHED LTDN ORIFICE B VLV, BG HIS-8149BA Red light – LIT Green light – EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 9 5 RNO b	b. Ensure Letdown Heat Exchanger Outlet Pressure Control Valve maintaining desired pressure. <ul style="list-style-type: none"> BG PK-131
	Standard:	Applicant verified BG PK-131 in AUTO and pressure maintained.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 10 5 RNO c	c. IF letdown from RHR System in progress, THEN adjust RHR Cleanup To Letdown Heat Exchanger Flow Control as necessary to maintain flow less than 120 gpm. <ul style="list-style-type: none"> BG HC-128
	Standard:	Applicant determined step Not Applicable.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 11 6	Check Letdown Heat Exchanger Outlet Temperature – DECREASING OR STABLE BETWEEN 110 F and 120 F. <ul style="list-style-type: none">• BG TI-130
	Standard:	Using BG TI-130, Applicant determined temperature ~115 F. Acceptable: DECREASING OR STABLE BETWEEN 110 F and 120 F.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 12 7	Check Letdown Heat Exchanger Outlet Temperature – LESS THAN 120 °F. <ul style="list-style-type: none">• BG TI-130
	Standard:	Using BG TI-130, Applicant determined temperature ~115 F Acceptable: Temperature less than 120 F
	Cue:	JPM “complete” at Examiner discretion.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	EXAMINER NOTE:	From validation on 5-8-13 with licensed operator, they would not do this step (going back to DEMIN position) until the cause of the high temperature was determined.
	Performance Step: 13 8	Place CVCS Demineralizer Inlet Divert Valve in DEMIN Position. <ul style="list-style-type: none">• BG HIS-129
	Standard:	At BG HIS-129, Applicant requests direction. No action taken. VCT – Red light LIT DEMIN – Red light EXTINGUISHED
	Cue:	CRS cue if asked: leave it in the VCT position.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 14 9	Return to Procedure And Step In Effect.
	Standard:	Applicant completed task.
	Cue:	JPM complete.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM Complete. Letdown Heat Exchanger Outlet Temperature – DECREASING OR STABLE BETWEEN 110 F and 120 F.
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STOP TIME: _____

Job Performance Measure No.:	<u>S2</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>You are the Reactor Operator.</p> <p>Unit is at 100%.</p> <p>ALR 00-039A, LTDN HX TEMP HI DIVERT is LIT.</p>
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INITIATING CUE:	<p>The Control Room Supervisor directs you to perform ALR 00-039A, LTDN HX TEMP HI DIVERT.</p>
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Facility:	Wolf Creek	Task No.:	N/A
Task Title:	<u>Isolate Accumulators following a LOCA</u>	JPM No.:	<u>S3</u>
K/A Reference:	006 A3.01 Ability to monitor automatic operation of the ECCS, including: Accumulators. 4.0/3.9 006 A4.07 Ability to manually operate and/or monitor in the control room: ECCS pumps and valves. 4.4/4.4		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	Simulator	X	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	You are the Reactor Operator. A LOCA has occurred. Actions of EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION, are being performed. All systems have functioned as expected.
Task Standard:	Applicant isolated Accumulators 'A,' 'B,' and 'C'. Applicant vented Accumulator 'D' because isolation valve would not close.
Required Materials:	EMG ES-11, rev 20, POST LOCA COOLDOWN AND DEPRESSURIZATION Simulator Operator: IC 304 Horns On. Run JPMs S3 and S7. IC 304 includes: ;Close Accumulator breakers IRF rEP05 f:3 k:1 ;EP HIS-8808D ;movEPHV8808 – FAILED OPEN There are SIMULATOR OPERATOR cues in this JPM as written.

General References:	EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION
Handouts:	EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION
Initiating Cue:	The Control Room Supervisor directs you to perform step 41 and 42 of EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION. Report when task is complete.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	15 minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide Information Only copy of EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION, to Applicant.

START TIME: _____

	Examiner NOTE:	EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION, step 41.
	Performance Step: 1 41.a.	Check If SI Accumulators Should Be Isolated: a. Check RCS Subcooling – GREATER THAN 30°F [45°F]
	Standard:	Applicant checked subcooling from either BB TI-1390A or BB TI-1390B, RCS DEGREES SUBCOOLING meters. Subcooling ~155°F Applicant determined subcooling was GREATER THAN 30°F [45°F]
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Applicant may use Steam Tables – subcooling per Steam Tables is ~155 degrees

	Performance Step: 2 41.b.	Check PZR Level – GREATER THAN 6% [33%]
	Standard:	Applicant determined PZR level ~ 40%
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Applicant may use PZR PROGRAM LEV RECORDER, BB LR-459 or PZR LEV meters BB LI-460A, BB LI-459A or BB LI-461.

	Performance Step: 3 42.a.	Isolate SI Accumulators: a. Locally close breakers for SI Accumulator Outlet valves. <ul style="list-style-type: none"> • NG01BGF3 for EP HV-8808A • NG02BGF3 for EP HV-8808B • NG01BGF2 for EP HV-8808C • NG02BHF2 for EP HV-8808D
	Standard:	Applicant dispatched Auxiliary Building Watch to close the breakers.
	Cue:	Cue as Auxiliary Building watch: Acknowledge request. Report that breakers are closed.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	SIMULATOR OPERATOR: Insert Key 1 to close breakers

*	Performance Step: 4 42.b. first bullet	Close Accumulator Tank Outlet Isolation Valves. <ul style="list-style-type: none"> • EP HIS-8808A
	Standard:	Applicant depressed EP HIS-8808A CLOSE pushbutton. Green light LIT Red light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	EP ZL-8808AA: Green light LIT & Red light EXTINGUISHED

*	Performance Step: 5 42.b second bullet	Close Accumulator Tank Outlet Isolation Valves. <ul style="list-style-type: none"> • EP HIS-8808B
	Standard:	Applicant depressed EP HIS-8808B CLOSE pushbutton. Green light LIT Red light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	EP ZL-8808BA: Green light LIT & Red light EXTINGUISHED

*	Performance Step: 6 42.b third bullet	Close Accumulator Tank Outlet Isolation Valves. • EP HIS-8808C
	Standard:	Applicant depressed EP HIS-8808C CLOSE pushbutton. Green light LIT Red light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	EP ZL-8808CA: Green light LIT & Red light EXTINGUISHED

	Performance Step: 7 42.b fourth bullet Alternate Path Step	Close Accumulator Tank Outlet Isolation Valves. • EP HIS-8808D
	Standard:	Applicant depressed EP HIS-8808D CLOSE pushbutton. Red light remained LIT Green light remained EXTINGUISHED Applicant determined EP HIS-8808D would not close. Applicant transitioned to RNO.
	Cue:	If contacted as Aux. Building watch, "Breaker is tripped."
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Accumulator pressure decreases slowly. In approximately one minute, Annunciator 46B, ACC TK D PRESS HILO, actuates. It is an expected alarm. When 46B actuates, the JPM can be completed.
*	Performance Step: 8 42.b RNO b.1 fourth asterisk	IF any accumulator can NOT be isolated, THEN perform the following: 1. Open associated accumulator vent valve(s). * EP HIS-8950F For Accumulator D
	Standard:	Applicant depressed EP HIS-8950F OPEN pushbutton. Red light LIT Green light EXTINGUISHED
	Cue:	JPM complete.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	EP1 screen from NPIS may be used to monitor 'D' Accumulator decrease. 'D' Accumulator pressure can be monitored on MCB indicators EP PI-966 and EP PI-967.

Terminating Cue:	JPM COMPLETE. Accumulator 'A', 'B' and 'C' are isolated. 'D' Accumulator vent in progress.
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STOP TIME: _____

Job Performance Measure No.:	<u>S3</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>You are the Reactor Operator.</p> <p>A LOCA has occurred. Actions of EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION, are being performed.</p> <p>All systems have functioned as expected.</p>
INITIATING CUE:	<p>The Control Room Supervisor directs you to perform step 41 and 42 of EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION.</p> <p>Report when task is complete.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	<u>Start a Reactor Coolant Pump (RCP)</u>	JPM No.:	<u>S4</u>
K/A Reference:	003 A4.06 Ability to manually operate and/or monitor in the control room: RCP parameters. 2.9/2.9		

Examinee:				NRC Examiner:			
Facility Evaluator:				Date:			
<u>Method of testing:</u>							
Simulated Performance:			Actual Performance:		X		
	Classroom		Simulator	X	Plant		

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	You are the Reactor Operator. The Unit is in MODE 4. Reactor Coolant Pump (RCP) 'A' was secured earlier in the shift due to leakoff issues. Maintenance reports all corrective actions are complete. Personnel are stationed to constantly monitor the Loose Parts Monitoring System. NPIS computer display BB3, Reactor Coolant System is displayed. Health Physics has been notified.
Task Standard:	Applicant accurately determined the Acceptable Region to start the RCP (Figure 1), started Reactor Coolant Pump 'A' and secured RCP 'A' Lift Oil Pump.
Required Materials:	SYS BB-201, rev 56, REACTOR COOLANT PUMP STARTUP Simulator Operator: IC 302; Horns On. Ensure NPIS has BB3 displayed.
General References:	SYS BB-201, REACTOR COOLANT PUMP STARTUP
Handouts:	SYS BB-201, REACTOR COOLANT PUMP STARTUP
Initiating Cue:	The Control Room Supervisor directs you to start RCP 'A' per SYS BB-201, REACTOR COOLANT PUMP STARTUP, section 6.1, Reactor Coolant Pump Startup. All prerequisites have been met.

Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	25 minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide Information Only copy of SYS BB-201, REACTOR COOLANT PUMP STARTUP, to the Applicant. Stage the Applicant in another room to allow for a read through of SYS BB-201, REACTOR COOLANT PUMP STARTUP.

START TIME: _____

	Examiner NOTE:	SYS BB-201, REACTOR COOLANT PUMP STARTUP, section 6.1 CAUTIONS: <ul style="list-style-type: none"> • Do not start an RCP while the Emergency Diesel Generators are paralleled with site power. • If RCS temperature is greater than 160°F and all RCPs are stopped while the RCS is being cooled down by the RHR System, a steam bubble in the Pressurizer is required prior to starting a RCP due to non-uniform RCS temperatures. • If RCS temperature is greater than 160°F and all RCPs are stopped for greater than 5 minutes, a steam bubble in the Pressurizer is required prior to starting a RCP due to non-uniform RCS temperatures. • If RCS temperature is less than 100°F, no more than two RCP's shall be in operation.
	Performance Step: 1 6.1.1.1	Initiate Seal Water Injection flow to the RCP(s) to be started: 1. Ensure RCP Seal Water Injection Valves are open. <ul style="list-style-type: none"> * BB HIS-8351A For RCP A – OPEN * BB HIS-8351B For RCP B - OPEN * BB HIS-8351C For RCP C - OPEN * BB HIS-8351D For RCP D – OPEN OR <ul style="list-style-type: none"> * Computer point BBD8351A – OPEN * Computer point BBD8351B – OPEN * Computer point BBD8351C – OPEN * Computer point BBD8351D – OPEN
	Standard:	Applicant verified: <ul style="list-style-type: none"> * Computer point BBD8351A – OPEN <input type="checkbox"/>
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 2 6.1.1.2 first asterisk	Open RCP Seal Water Return Valves. * BB HIS-8141A For RCP A - OPEN
	Standard:	Applicant verified BB HIS-8141A OPEN Red light LIT Green light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	If flow is low, Applicant may adjust flow using BG HC-182, CHG HDR BACK PRESS CTRL (in the close direction), increasing seal injection flow.
	Performance Step: 3 6.1.1.3	Verify Seal Water Injection flow to RCPs is between 8 gpm and 13 gpm. * BG FR-157 For RCP A – BETWEEN 8 GPM AND 13 GPM * BG FR-156 For RCP B – BETWEEN 8 GPM AND 13 GPM * BG FR-155 For RCP C – BETWEEN 8 GPM AND 13 GPM * BG FR-154 For RCP D – BETWEEN 8 GPM AND 13 GPM
	Standard:	At RCP SEAL LEAKOFF & INJ FLOW RECORDERS, Applicant verified seal injection flow between 8 and 13 gpm. * BG FR-157 For RCP A – BETWEEN 8 GPM AND 13 GPM
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	BG FR-157, BG FR-156, BG FR-155 and BG FR-154 at ~8.7 gpm.

	Performance Step: 4 6.1.2 first asterisk	Check RCP Seal dP greater than 200 psid on RCP(s) to be started. * BB PI-153A For RCP A – GREATER THAN 200 PSID * BB PI-152A For RCP B – GREATER THAN 200 PSID * BB PI-151A For RCP C – GREATER THAN 200 PSID * BB PI-151A For RCP D – GREATER THAN 200 PSID
	Standard:	At RCP seal dP meters, Applicant verified greater than 200 psid. * BB PI-153A For RCP A – GREATER THAN 200 PSID
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	BB PI-153A at ~340 psid.

	Performance Step: 5 6.1.3.1	Check the status of the following annunciators: 1. Ensure 00-042C, VCT PRESS HILO is clear.
	Standard:	Applicant verified annunciator CLEAR: 00-042C, VCT PRESS HILO – CLEAR
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 6 6.1.3.2 all four asterisks	Ensure the following annunciators are not in alarm due to conditions present on the RCP to be started: <ul style="list-style-type: none"> * 00-071A, RCP #1 SEAL ΔP LO – CLEAR * 00-072A, RCP #1 SEAL FLOW HI – CLEAR * 00-073A, RCP #2 SEAL FLOW HI – CLEAR * 00-074D, RCP OIL RSVR LEV HILO - CLEAR
	Standard:	Applicant verified annunciators CLEAR: <ul style="list-style-type: none"> * 00-071A, RCP #1 SEAL ΔP LO – CLEAR <input type="checkbox"/> * 00-072A, RCP #1 SEAL FLOW HI – CLEAR <input type="checkbox"/> * 00-073A, RCP #2 SEAL FLOW HI – CLEAR <input type="checkbox"/> * 00-074D, RCP OIL RSVR LEV HILO - CLEAR <input type="checkbox"/>
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 7 6.1.3.3 first bullet	IF starting RCP A, THEN verify the following annunciators are clear: <ul style="list-style-type: none"> • 00-070C, RCP A THRM BAR CCW FLOW – CLEAR
	Standard:	Applicant verified annunciator CLEAR: <ul style="list-style-type: none"> • 00-070C, RCP A THRM BAR CCW FLOW – CLEAR
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 8 6.1.3.3 second bullet	<ul style="list-style-type: none"> • 00-070E, RCP A STNDPIPE LEV LO – CLEAR
	Standard:	Applicant verified annunciator CLEAR: <ul style="list-style-type: none"> • 00-070E, RCP A STNDPIPE LEV LO – CLEAR
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 9 6.1.3.4	IF starting RCP B, THEN verify the following annunciators are clear: <ul style="list-style-type: none">• 00-071C, RCP B THRM BAR CCW FLOW – CLEAR• 00-071E, RCP B STNDPIPE LEV LO – CLEAR
	Standard:	Applicant realized this step is Not Applicable.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 10 6.1.3.5	IF starting RCP C, THEN verify the following annunciators are clear: <ul style="list-style-type: none">• 00-072C, RCP C THRM BAR CCW FLOW – CLEAR• 00-072E, RCP C STNDPIPE LEV LO – CLEAR
	Standard:	Applicant realized this step is Not Applicable.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 11 6.1.3.6	IF starting RCP D, THEN verify the following annunciators are clear: <ul style="list-style-type: none">• 00-073C, RCP D THRM BAR CCW FLOW – CLEAR• 00-073E, RCP D STNDPIPE LEV LO – CLEAR
	Standard:	Applicant realized this step is Not Applicable.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	The Red pen (1) is #1 Seal leakoff flow at the recorders. Only RCP 'A' is presented as the other RCPs are not being started.
*	Performance Step: 12 6.1.4 first asterisk	Check RCP #1 Seal Leakoff flow greater than the minimum required based on #1 Seal dP, refer to FIGURE 1, RCP NUMBER 1 SEAL LEAKOFF VERSUS SEAL dP for RCP(s) to be started. * BG FR-157 For RCP A – GREATER THAN MINIMUM
	Standard:	Applicant used #1 seal leakoff flow from BG FR-157, RCP 'A' seal ΔP from BB PI-153A and FIGURE 1 to determine Acceptance (greater than minimum). * #1 seal leakoff flow from BG FR-157 \cong 1.2 gpm * RCP A seal ΔP from BB PI-153A \cong 390-400 psid * From FIGURE 1 criteria = ACCEPTABLE REGION
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Critical step because Applicant determined values and read graph to determine Acceptable region on Figure 1.

	Performance Step: 13 6.1.5	Check RCP Seal Water Injection Temperature less than 135°F. • BG TI-216 – LESS THAN 135°F
	Standard:	Using BG TI-216, Applicant determined seal water injection temperature less than 135°F.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	BG TI-216 indicates ~112°F.

	Performance Step: 14 6.1.6	Personnel are stationed to constantly monitor the Loose Parts Monitoring System for each RCP start and for 30 minutes following each RCP start.
	Standard:	Applicant recalled Initial Condition cue: Personnel are stationed to constantly monitor the Loose Parts Monitoring System.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 15 6.1.7	Monitor RCP temperatures. * NPIS Computer TOC - BB3, REACTOR COOLANT SYSTEM * Trend Recorder BB-TR-500 on RP068
	Standard:	Applicant recalled Initial Condition cue: NPIS computer display BB3, Reactor Coolant System is displayed.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Examiner NOTE:	Applicant may make a plant announcement prior to starting the RCP lift pump. RCP lift pump start time: _____
	Performance Step: 16 6.1.8 first asterisk	Start RCP lift pump for the Reactor Coolant Pump to be started. * BB HIS-41 For RCP A – NORMAL AFTER RUN
	Standard:	Applicant manipulated BB HIS-41 to RUN position. Red light LIT White light LIT
	Cue:	If needed: Acknowledge pump start.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	RCP lift pump start time from above _____ plus 2 minutes = _____ earliest time RCP A is started.
	Performance Step: 17 6.1.9	Allow lift pump to run for at least 2 minutes.
	Standard:	Applicant monitored time to verify two minutes have passed.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	<p>CAUTION: If lift oil system fails to come up to pressure, it may be vapor locked. Stop lift oil pump and restart it after one minute. Check indicator light for proper pressure and continue if the desired pressure has been achieved. This may be repeated up to five times in rapid succession per Westinghouse vendor.</p> <p>NOTE: A pressure interlock prevents starting the RCP unless a minimum oil pressure of 600 psig is available to the Motor Thrust Bearing Oil Lift System. This interlock is satisfied when the white light on the respective oil lift pump control switch is lit.</p>
	Performance Step: 18 6.1.10 first asterisk	<p>IF white light on respective oil lift pump control switch is NOT lit, THEN cycle respective RCP lift pump at one minute intervals, until proper pressure is achieved or up to 5 times.</p> <p>* BB HIS-41 For RCP A – STOP/NORMAL-AFTER-RUN</p>
	Standard:	Applicant determined White light LIT for oil lift pump. Step did not apply.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	HP HOLD POINT
	Performance Step: 19 Prior to 6.1.11	<p>Notify Health Physics of potential changes to radiological conditions. [3.2.7]</p> <p>RCP A: Verified: Date</p>
	Standard:	Applicant recalled from Initiating Condition that Health Physics has been notified.
	Cue:	Health Physics/CRS cue: Acknowledge information.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Applicant may make a plant announcement prior to starting RCP 'A'. RCP 'A' start time: _____. Must be at least two minutes after lift pump started in step 6.1.9.
	Examiner NOTE:	CAUTIONS: <ul style="list-style-type: none"> • If starting an RCP during solid plant operations, manual control of Letdown may be necessary to reduce the possible pressure surge. • Start one RCP at a time and allow flow and amps to stabilize before starting the next RCP. NOTES: <ul style="list-style-type: none"> • Indicated upper oil level may decrease when starting an RCP, due to circulation in the reservoir. RCP upper oil level may indicate 6-8 percent less than when the pump is running, than when stopped. Refer to ALR 00-074D, RCP OIL RSVR LEV HILO. • If indicated oil level decreased more than 8percent as a result of a pump start, oil may have been displaced into the "dry leg" of the level detector. Refer to ALR 00-074D, RCP OIL RSVR LEV HILO
*	Performance Step: 20 6.1.11 first asterisk	Start desired RCP. * BB HIS-37 For RCP A – NORMAL AFER RUN
	Standard:	Using BB HIS-37, Applicant manipulated switch to RUN position. Red light LIT
	Cue:	SYS OPS cue if needed: Acknowledge information.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Diverse indication of RCP 'A' pump start: <ul style="list-style-type: none"> * Amps increased - RCP A AMPS, meter BB II-1 (~240 amps indicated) * LOOP 1 REACTOR COOLANT FLOW increased – BB FI-414/BB FI-415/BB FI-416 (110% indicated)

	Examiner NOTE:	Time RCP 'A' started plus one minute = time that RCP lift pump can be secured. Time RCP lift pump secured _____ Applicant may make a plant announcement.
*	Performance Step: 21 6.1.12 first asterisk	WHEN RCP has run for greater than 1 minute, THEN stop RCP lift pump. * BB HIS-41 For RCP A – NORMAL AFTER STOP
	Standard:	Applicant manipulated switch BB HIS-41 to STOP and secured RCP A lift pump. Red light EXTINGUISHED White light EXTINGUISHED Green light LIT
	Cue:	JPM Complete.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM COMPLETE. RCP 'A' started and RCP 'A' lift pump secured.
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STOP TIME: _____

Job Performance Measure No.:	<u>S4</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>You are the Reactor Operator.</p> <p>The Unit is in MODE 4.</p> <p>Reactor Coolant Pump (RCP) 'A' was secured earlier in the shift due to leakoff issues.</p> <p>Maintenance reports all corrective actions are complete.</p> <p>Personnel are stationed to constantly monitor the Loose Parts Monitoring System.</p> <p>NPIS computer display BB3, Reactor Coolant System is displayed.</p> <p>Health Physics has been notified.</p>
INITIATING CUE:	<p>The Control Room Supervisor directs you to start RCP 'A' per SYS BB-201, REACTOR COOLANT PUMP STARTUP, section 6.1, Reactor Coolant Pump Startup.</p> <p>All prerequisites have been met.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	<u>Synchronize the Main Generator to the Grid</u>	JPM No.:	<u>S5</u>
K/A Reference:	045 A4.02 Ability to manually operate and/or monitor in the control room: T/G controls, including breakers. 2.7/2.6		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	Simulator	X	Plant
READ TO THE EXAMINEE			
I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.			
Initial Conditions:	You are the Balance of Plant operator. The Unit is at ~8 to ~10%. GEN 00-003, HOT STANDBY TO MINIMUM LOAD step 6.8 is in progress.		
Task Standard:	Applicant synchronized the Main Turbine/Generator to the grid and closed switchyard breaker 1.		
Required Materials:	SYS AC-120, rev 82A, MAIN TURBINE GENERATOR STARTUP, GEN 00-003, rev 91, HOT STANDBY TO MINIMUM LOAD, stopwatch Simulator Operator: IC 308. Horns On. Set up NPIS terminal by BOP with the trends for MAI004 (0-1000 scale) and MAP001 (scale 0-50MW).		
General References:	SYS AC-120, MAIN TURBINE GENERATOR STARTUP		
Handouts:	SYS AC-120, MAIN TURBINE GENERATOR STARTUP, stopwatch		

Initiating Cue:	The Control Room Supervisor directs you to synchronize the Main Generator to the grid per GEN 00-003, HOT STANDBY TO MINIMUM LOAD step 6.8, using SYS AC-120, MAIN TURBINE GENERATOR STARTUP, section 6.4, Synchronizing Main Generator, beginning at step 6.4.3.1. All prerequisites are complete. Meter and Relay personnel have enabled distance relays. System Operations has been notified. Reactor Operator has been briefed per step 6.4.3.2 for energizing PZR backup heaters. Select Breaker 1 as the first switchyard breaker to synchronize.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	20 minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide the Information Only copies of SYS AC-120, MAIN TURBINE GENERATOR STARTUP, and if requested, GEN 00-003, HOT STANDBY TO MINIMUM LOAD, to the Applicant.

START TIME: _____

	Examiner NOTE:	SYS AC-120, MAIN TURBINE GENERATOR STARTUP, section 6.4, Synchronizing Main Generator
	Examiner NOTE:	CAUTIONS: <ul style="list-style-type: none"> • (ρ) Reactivity SRO should be used to oversee and approve use of Control rods when synchronizing the Main Generator. • (ρ) If the Turbine loads faster than steam dumps close, control rods may be used to maintain primary to secondary balance by withdrawing during the loading and inserting as steam dumps go closed. Control rod withdrawal and insertion will be limited by MTC, i.e. fewer steps at BOL versus EOL. NOTE: 8% to 10% reactor power is desired. This ensures an adequate number of Steam Dumps are open to support synchronizing Main Generator without all Steam Dumps going closed and requires minimal rod movement.
	Performance Step: 1 6.4.3.1	Synchronize Main Generator to grid, as follows: 1. From NPIS, monitor the following points: <ul style="list-style-type: none"> • MAI0004 • MAP0001
	Standard:	
	Cue:	Applicant monitors NPIS display points.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	NPIS terminal by BOP has NPIS points displayed.

	Examiner NOTE:	Additional staff on floor will make any control rod adjustments or Pressurizer heater adjustments.
	Performance Step: 2 6.4.3.2	Brief RO on the need to respond to RCS pressure, using control rods as necessary, while monitoring RCS temperature, pressure and reactor power.
	Standard:	Applicant recalled Initiating Cue: Reactor Operator has been briefed per step 6.4.3.1.
	Cue:	If needed: Reactor Operator has been briefed per step 6.4.3.2.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 3 6.4.3.3	Ensure SWYD 345-50/60 MSN TRIP PERMIT is in off. <ul style="list-style-type: none"> MA HS-5 - OFF
	Standard:	Applicant verified MA HS-5 in OFF position.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 4 6.4.3.4	Select first switchyard breaker to be synchronized, using MA HS-2, BKR SEL SWITCH <ul style="list-style-type: none"> * Breaker 1 – SELECTED <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> * Breaker 2 - SELECTED
	Standard:	Applicant manipulated switch MA HS-2 to BKR R1 position (Breaker 1 selected)
	Cue:	If needed: Select breaker 1
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Recall Initial Cues: Select Breaker 1 as the first switchyard breaker to synchronize.

	Examiner NOTE:	NOTE: Matching Generator transformer voltage with switchyard voltage must be as close as possible to avoid system upset. NOTE: Each mark is 2.5 KV
*	Performance Step: 5 6.4.3.5	Adjust MB HS-6, AC AUTO VOLT REG BKR, as necessary, to establish Generator Transformer Voltage between 1 KV and 2 KV higher than switchyard voltage. <ul style="list-style-type: none"> • MA EI-8 For Transformer Voltage • MA EI-9 For Switchyard Voltage
	Standard:	Applicant adjusted MB HS-6 in the LOWER direction to establish generator voltage between 1 KV and 2 KV higher than switchyard voltage.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	NOTE: When adjusting Turbine speed at or near 1800 rpm, response to small changes may require between 15 seconds and 30 seconds to stabilize.
	Performance Step: 6 6.4.3.6.a.	Adjust Main Generator speed for synchronizing, as follows: a. Select Graphic 5551, TURBINE CONTROL SYSTEM – OPERATION PANEL.
	Standard:	Applicant, used OVATION controls, selected Graphic 5551 - TURBINE CONTROL SYSTEM – OPERATION PANEL
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Graphic 5551 may already be displayed on OVATION.

	Performance Step: 7 6.4.3.6.b.	b. From the SETPOINTS section, select the TRIM button.
	Standard:	Applicant used OVATION controls, SETPOINTS section, selected TRIM button.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 8 6.4.3.6.c.	c. From Popup 7059, MODIFY SPEED REFERENCE, select the applicable MODIFY REF arrow button to raise or lower turbine speed, until the Main Generator Synchroscope is rotating slowly in the fast direction. <ul style="list-style-type: none">• MA SI-6
	Standard:	Applicant, used OVATION controls, Popup 7059, used RAISE/LOWER arrow button until Main Generator Synchroscope was rotating slowly in the fast direction as observed on MA SI-6.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 9 6.4.3.6.d.	Ensure rotation of the synchroscope is between 30 seconds and 90 seconds, by adjusting turbine speed, as necessary
	Standard:	Applicant, used OVATION controls, Popup 7059, used RAISE/LOWER arrow button until Main Generator Synchroscope was rotating in between 30 and 90 seconds as observed on MA SI-6.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	SYNC CHECK PERMISSIVE light, MA ZL-2, White light LIT for Breaker 1 and MA SI-6 synchroscope pointer is in the up position.
	Performance Step: 10 6.4.3.6.e.	Check selected breaker Sync Check Permissive white light is lit only when synchroscope pointer is in the up direction. <ul style="list-style-type: none">* MA ZL-2 – LIT* MA ZL-3 - LIT
	Standard:	Applicant checked MA ZL-2 White light LIT when synchroscope pointer in the up position.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	MB HS-6, AC AUTO VOLT REG BKR, may be adjusted.

	Performance Step: 11 6.4.3.6.f.	Ensure Generator transformer voltage is between 1 KV and 2 KV higher than switchyard voltage. <ul style="list-style-type: none">• MA EI-8• MA EI-9
	Standard:	Applicant compared MA EI-8 and MA EI-9 to ensure generator transformer voltage was between 1 KV and 2 KV higher than switchyard voltage.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 12 6.4.3.7	WHEN selected breaker Sync Check Permissive white light is lit for the selected breaker, THEN close selected breaker. <ul style="list-style-type: none">* MA HS-3 – CLOSED OR <ul style="list-style-type: none">* MA HS-4 CLOSED
	Standard:	When MA ZL-2, SYNC CHECK PERMISSIVE White light LIT, Applicant manipulated MA HS-3 in the CLOSE direction.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 13 6.4.3.8	Ensure selected switchyard breaker closed. * Breaker 1 – CLOSED * At RL006, MA ZL-3A * At RL014, 1ZL-SY010
	Standard:	<input type="checkbox"/> At RL006, Applicant verified MA ZL-3A CLOSED: Red Light LIT OR <input type="checkbox"/> At RL014, Applicant verified 1ZL-SY010 CLOSED: Red Light LIT
	Cue:	Breaker 1 selected. JPM complete.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM complete. Switchyard breaker 1 is closed.
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STOP TIME: _____

Job Performance Measure No.:	<u>S5</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>You are the Balance of Plant operator.</p> <p>The Unit is at ~8 to ~10%.</p> <p>GEN 00-003, HOT STANDBY TO MINIMUM LOAD step 6.8 is in progress.</p>
INITIATING CUE:	<p>The Control Room Supervisor directs you to synchronize the Main Generator to the grid per GEN 00-003, HOT STANDBY TO MINIMUM LOAD step 6.8, using SYS AC-120, MAIN TURBINE GENERATOR STARTUP, section 6.4, Synchronizing Main Generator, beginning at step 6.4.3.1.</p> <p>All prerequisites are complete.</p> <p>Meter and Relay personnel have enabled distance relays.</p> <p>System Operations has been notified.</p> <p>Reactor Operator has been briefed per step 6.4.3.2 for energizing PZR backup heaters.</p> <p>Select Breaker 1 as the first switchyard breaker to synchronize.</p>

Facility:	Wolf Creek	Task No.:	N/A
Task Title:	<u>Start Containment Atmosphere Control Fan</u>	JPM No.:	<u>S6</u>
K/A Reference:	027 A4.03 Ability to manually operate and/or monitor in the control room: Containment Iodine Removal System fans. 3.3/3.2		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	Simulator	X	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	You are the Reactor Operator. Unit is Refueling – fuel movement in Containment is in progress. The Fuel Handling SRO reported a fuel handling accident in Containment. OFN KE-018, FUEL HANDLING ACCIDENT, is in progress. NOTE: For JPM purposes, the Source Range Audio is turned down.
Task Standard:	<p>The Applicant started Train 'A' Containment Atmospheric Control System Fan, manually initiated CPIS and manually closed the following dampers:</p> <p>Red Train: GT HIS-7, CTMT S/D PURGE AIR SPLY CTMT ISO GT HIS-9, CTMT S/D PURGE EXH OUTER CTMT ISO</p> <p>Yellow Train: GT HIS-6, CTMT S/D PURGE AIR SPLY CTMT ISO GT HIS-8, CTMT S/D PURGE EXH INNER CTMT ISO</p>

Required Materials:	<p>OFN KE-018, rev 12, FUEL HANDLING ACCIDENT</p> <p>Simulator Operator: IC 305. Horns On.</p> <p>Refueling IC with shutdown CTMT purge in progress per SYS GT-121, CONTAINMENT SHUTDOWN PURGE SYSTEM OPERATION, with sections 6.1 and 6.2 completed.</p> <p>File embedded in the IC ;S6 3 NEW ;Shutdown supply and return auto-close defeats, manual available IMF mSA27GT15 i:-1 f:-1 IMF mSA27GT13 i:-1 f:-1 IMF mSA27GT14 i:-1 f:-1 IMF mSA27GT16 i:-1 f:-1</p>
General References:	OFN KE-018, FUEL HANDLING ACCIDENT
Handouts:	OFN KE-018, FUEL HANDLING ACCIDENT
Initiating Cue:	The Control Room Supervisor directs you to perform step 4 and 5 of OFN KE-018, FUEL HANDLING ACCIDENT. Start 'A' train fan.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	10 minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide the Information Only copy of procedure OFN KE-018, FUEL HANDLING ACCIDENT, to the Applicant.

START TIME: _____

	Examiner NOTE:	OFN KE-018, FUEL HANDLING ACCIDENT, step 4
	Performance Step: 1 4.a.	Verify Adequate CTMT Ventilation: a. Ensure Containment Coolers – AT LEAST TWO OPERATING IN FAST SPEED
	Standard:	Applicant verified CTMT COOLER FAN B and CTMT COOLER FAN D running in fast speed.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Applicant may make a plant announcement prior to fan start.
*	Performance Step: 2 4.b.	Ensure Containment Atmosphere Control System Fan – AT LEAST ONE RUNNING * GR HIS-10 For Train A * GR HIS-20 For Train B
	Standard:	From INITIATING CUE, Applicant manipulated GR HIS-10, CTMT ATMS CTRL SYS A FAN & DAMPER switch to RUN. Red Light LIT Green Light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 3 5.a. Alternate Path Step	Ensure CTMT Purge Isolation – ACTUATED a. Check ESFAS Status Panel CPIS Section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> • Red Train • Yellow Train
	Standard:	Red Train: At ESFAS panel SA066-X: Applicant determined All white lights – NOT LIT <input type="checkbox"/> Yellow train: At ESFAS panel SA066-Y: Applicant determined All white lights – NOT LIT <input type="checkbox"/> Applicant transitioned to RNO column.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 4 5.a. RNO a.1. first bullet	a. Perform the following: 1. IF containment purge isolation has NOT actuated, THEN manually actuate containment purge isolation. <ul style="list-style-type: none"> • SA HS-11
	Standard:	Applicant depressed ACTUATE pushbutton SA HS-11, CTMT PURGE TRN A ISO.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 5 5.a RNO a.1 second bullet	<ul style="list-style-type: none"> • SA HS-15
	Standard:	Applicant depressed ACTUATE pushbutton SA HS-15, CTMT PURGE TRN B ISO.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	These steps can be done in any order.
*	Performance Step: 6 5.a RNO a. 2 (Red Train)	IF any CPIS component NOT properly aligned, THEN manually align component. IF component(s) can NOT be aligned, THEN manually or locally isolate affected containment penetration.
	Standard:	Applicant determined from SA066-X panel CTMT S/D PURGE AIR SPLY DMPR, GTHZ7, was NOT LIT. Applicant depressed CLOSE pushbutton, GT HIS-7, CTMT S/D PURGE AIR SPLY CTMT ISO. Green Light LIT Red Light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 7 5.a RNO a. 2 (Red Train)	IF any CPIS component NOT properly aligned, THEN manually align component. IF component(s) can NOT be aligned, THEN manually or locally isolate affected containment penetration.
	Standard:	Applicant determined from SA066-X panel CTMT S/D PURGE EXH DMPR, GTHZ9, was NOT LIT. Applicant depressed CLOSE pushbutton, GT HIS-9, CTMT S/D PURGE EXH OUTER CTMT ISO. Green Light LIT Red Light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 9 5. a RNO a. 2 (Yellow Train)	IF any CPIS component NOT properly aligned, THEN manually align component. IF component(s) can NOT be aligned, THEN manually or locally isolate affected containment penetration.
	Standard:	Applicant determined from SA066-Y panel CTMT S/D PURGE AIR SPLY DMPR, GTHZ6, was NOT LIT. Applicant depressed CLOSE pushbutton, GT HIS-6, CTMT S/D PURGE AIR SPLY CTMT ISO. Green Light LIT Red Light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 8 5.a RNO a. 2 (Yellow Train)	IF any CPIS component NOT properly aligned, THEN manually align component. IF component(s) can NOT be aligned, THEN manually or locally isolate affected containment penetration.
	Standard:	Applicant determined from SA066-Y panel CTMT S/D PURGE EXH DMPR, GTHZ8, was NOT LIT. Applicant depressed CLOSE pushbutton, GT HIS-8, CTMT S/D PURGE EXH INNER CTMT ISO. Green Light LIT Red Light EXTINGUISHED
	Cue:	JPM Complete.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM Complete. Containment Atmosphere Control System Fan started and CPIS was correctly aligned.
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STOP TIME: _____

Job Performance Measure No.:	<u>S6</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>You are the Reactor Operator.</p> <p>Unit is Refueling – fuel movement in Containment is in progress.</p> <p>The Fuel Handling SRO reported a fuel handling accident in Containment.</p> <p>OFN KE-018, FUEL HANDLING ACCIDENT, is in progress.</p> <p>NOTE: For JPM purposes, the Source Range Audio is turned down.</p>
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INITIATING CUE:	<p>The Control Room Supervisor directs you to perform step 4 and 5 of OFN KE-018, FUEL HANDLING ACCIDENT.</p> <p>Start 'A' train fan.</p>
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Facility:	Wolf Creek	Task No.:	N/A
Task Title:	<u>Place Unit Vent Monitor in Accident Mode of operation</u>	JPM No.:	<u>S7</u>
K/A Reference:	073 A4.02 Ability to manually operate and/or monitor in the control room: radiation monitoring system control panel. 3.7/3.7		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	Simulator	X	Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:	You are the Reactor Operator. The Unit has declared a General Emergency. A Unit Vent radiological release is in progress.
Task Standard:	Applicant placed Unit Vent in Accident Mode of operation and verified using SP010 panel.
Required Materials:	<p>SYS SP-121, OPERATION OF THE G.A. MONITOR SYSTEM</p> <p>Simulator Operator: IC 304 – Run with S3. Horns On.</p> <p>Acknowledge any RM-11 alarms. Ensure RM-11 is in NORMAL (not Supervisory) with the key inserted.</p> <p>Simulator Operator: In between Applicants, return the Unit Vent to Normal Mode of Operations.</p> <p>At RM-11, key in 213 and select; depress LIT GRID 5 SEL; Press 1 (it's backlit); 0 ENTER; ENTER again (see the Operator Info Area at bottom of RM-11 screen). At GT RIC-21B – Press MON key, Press 139; Press ITEM; Display should read 001.</p>
General References:	SYS SP-121, rev 21, OPERATION OF THE G.A. MONITOR SYSTEM, EPP 06-001, rev 17, CONTROL ROOM OPERATIONS

Handouts:	SYS SP-121, OPERATION OF THE G.A. MONITOR SYSTEM
Initiating Cue:	The Control Room Supervisor directs you to perform step 6.10.1 to place Unit Vent Monitor, GT RE-21B, in ACCIDENT mode using the RM-11R (SP056).
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	No
Validation Time:	10 minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide the Information Only copy of SYS SP-121, OPERATION OF THE G.A. MONITOR SYSTEM to the Applicant.

START TIME: _____

	Examiner NOTE:	SYS SP-121, OPERATION OF THE G.A. MONITOR SYSTEM, step 6.10, Placing Unit Vent Monitor In Accident Mode.
	Performance Step: 1 6.10.1.1	Placing Unit Vent Monitor GT RE-21B in Accident Mode using RM-11R (SP056A): 1. Press the GRID 1 key.
	Standard:	Applicant depressed GRID 1 key.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	NOTE: The Unit Vent Monitor can not be verified in Accident Mode using RM-11R (SP056A).

	Performance Step: 2 6.10.1.2	Place Supervisor Master Key in the key slot and turn it to SUPERVISOR position.
	Standard:	Applicant placed key in slot and turned to SUPERVISOR position.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 3 6.10.1.3	Key in the three digit channel identification number 213.
	Standard:	Applicant keyed in 213 identification number.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 4 6.10.1.4	Press the SEL key and check the selected channel is outlined in white.
	Standard:	Applicant depressed SEL key. <input type="checkbox"/> Selected channel (213) was outlined in white. <input type="checkbox"/>
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 5 6.10.1.5	Press the LIT key.
	Standard:	Applicant depressed the LIT key.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 6 6.10.1.6	Press the GRID 5 key.
	Standard:	Applicant depressed the GRID 5 key.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 7 6.10.1.7	Press the SEL key.
	Standard:	Applicant depressed the SEL key.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Supervisor RM-80 Database is displayed on the RM-11 monitor screen.

	Performance Step: 8 6.10.1.8	Press 1.
	Standard:	Applicant depressed 1.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 9 6.10.1.9	Press the SEL key and check Monitor Item 1 is backlit.
	Standard:	Applicant depressed the SEL key. <input type="checkbox"/> Applicant check Monitor Item 1 was backlit. <input type="checkbox"/>
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Supervisor RM-80 Database Monitor item 1 is backlit.

	Performance Step: 10 6.10.1.10	Press 4.
	Standard:	Applicant depressed 4.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 11 6.10.1.11	Press the ENTER key.
	Standard:	Applicant depressed the ENTER key.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	At the bottom of the RM-11 monitor screen, Operator instructions pop up. Enter must be depressed a second time for the database to be updated.

	Performance Step: 12 6.10.1.12	At GT RIC-21B, verify Unit Vent Monitor in Accident Mode, as follows
	Standard:	Applicant recalled NOTE prior to step 6.10.1 and moved over to GT RIC-23B (RM-23 for the Unit Vent Monitor) on the SP010 Panel.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 13 6.10.1.12.a	Press the MON key.
	Standard:	Applicant depressed the MON key.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	After depressed, the MON key will be backlit.

	Performance Step: 14 6.10.1.12.b	Press 139.
	Standard:	Applicant depressed 139.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

*	Performance Step: 15 6.10.1.12.c	Press the ITEM key.
	Standard:	Applicant depressed ITEM key.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	After depressed, the ITEM key will be backlit.

	Performance Step: 15 6.10.1.12.d	Check display reading 000.
	Standard:	Applicant verified display reading 000.
	Cue:	JPM complete.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM Complete. Applicant changed RM-11 Supervisor database for the Unit Vent and verified Unit Vent in Accident Mode at the Unit Vent's RM-23 (SP010 panel).
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STOP TIME: _____

Job Performance Measure No.:	<u>S7</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>You are the Reactor Operator.</p> <p>The Unit has declared a General Emergency.</p> <p>A Unit Vent radiological release is in progress.</p>
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INITIATING CUE:	<p>The Control Room Supervisor directs you to perform step 6.10.1 to place Unit Vent Monitor, GT RE-21B, in ACCIDENT mode using the RM-11R (SP056).</p>
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Facility:	Wolf Creek	Task No.:	N/A
Task Title:	<u>Transfer Component Cooling Water System Service Loop</u>	JPM No.:	<u>S8</u>
K/A Reference:	<p>008 A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions, or operations: Loss of a CCW pump. 3.3/3.6</p> <p>008 A4.01 Ability to manually operate ad/or monitor in the control room: CCW indications and controls. 3.3/3.1</p>		

Examinee:		NRC Examiner:	
Facility Evaluator:		Date:	
<u>Method of testing:</u>			
Simulated Performance:		Actual Performance:	X
Classroom	Simulator	X	Plant
READ TO THE EXAMINEE			
I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.			
Initial Conditions:	You are the Reactor Operator. Unit is at 100%. ALR 00-052A, CCW TO RCP FLOW LO, is LIT.		
Task Standard:	Applicant started CCW pump 'A' or 'C' and transferred the Service loop from Train 'B' to Train 'A'.		

Required Materials:	ALR 00-052A, CCW TO RCP FLOW LO Simulator Operator: IC 311 File is included in the IC. Run S2 and S8. Horns On. IC 30 – 100% power Run file S8 ; cause low flow alarm due to RCDT cooling flow low IRF rHB02 f:2 ; D CCW Breaker will not close ICM bkrDPEG01D t:2 d:0 ; Swapping loops causes low flow to clear {fbfEG023.flow>10} IRF rHB02 f:14
General References:	ALR 00-052A, rev 13, CCW TO RCP FLOW LO
Handouts:	ALR 00-052A, CCW TO RCP FLOW LO
Initiating Cue:	The Control Room Supervisor directs you to perform ALR 00-052A, CCW TO RCP FLOW LO.
Time Critical Task: (Yes or No)	No
Alternate Success Path: (Yes or No)	Yes
Validation Time:	15 minutes

(Denote Critical Steps with an asterisk)

Examiner NOTE: Provide the Information Only copy of ALR 00-052A, CCW TO RCP FLOW LO, to the Applicant.

START TIME: _____

	Examiner NOTE:	ALR 00-052A, CCW TO RCP FLOW LO, step 1.
	Performance Step: 1 1.	Check CCW To RCS Flow – LESS THAN 1.25×10^6 LBM/HR <ul style="list-style-type: none"> • EG FI-128 • EG FI-129
	Standard:	At EG FI-128 and EG FI-129 Applicant determined flow was <ul style="list-style-type: none"> • $\cong 1.24 \text{ E6 LBM/HR}$ for EG FI-128 • $\cong 1.23 \text{ E6 LBM/HR}$ for EG FI-129
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 2 2	Check If CCW Flow To RCS Required: <ul style="list-style-type: none"> * RCS Temperature – GREATER THAN 200°F
	Standard:	Applicant determined RCS temperature greater than 200°F.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	NPIS computer display.

	Performance Step: 3 3	Check Containment Isolation Phase B – NOT ACTUATED
	Standard:	Applicant determined Containment Isolation Phase B – NOT ACTUATED Main Control Board alarm 59B, CISB, CLEAR Or ESFAS status panels (SA066X and SA066Y) CTMT ISO SYS PHASE B, NO WHITE LIGHTS LIT
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 4 4.a	Monitor RCP Motor Temperatures Using NPIS Computer: a. Check RCP Motor Bearing Temperatures – LESS THAN 195°F <ul style="list-style-type: none">• Turn On Code BB3
	Standard:	Applicant used BB3 display from an NPIS terminal to check RCP motor bearing temperatures < 195°F.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 5 4.b	b. Check RCP Motor Stator Winding temperatures - LESS THAN 299°F <ul style="list-style-type: none">• Turn On Code BB3
	Standard:	Applicant used BB3 display from an NPIS terminal to check RCP motor bearing temperatures < 299°F.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 6 5 Alternate Path Step	Check CCW Pumps In Train Supplying Service Loop – BOTH RUNNING
	Standard:	Applicant determined CCW B pump running. Applicant determined CCW D pump not running. Applicant transitioned to RNO.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 7 5 RNO a.	Perform the following: a. Start standby CCW Pump in train supplying service loop.
	Standard:	Applicant manipulated handswitch CCW PUMP D, EG HIS-24, to RUN CCW pump 'D' does not start. Green Light – LIT Amber Light - LIT
	Cue:	If needed: Respond as Building Watch to investigate CCW 'D'. If needed: Respond as Building watch to perform pre-start checks. Pre-start checks are SAT.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 8 5 RNO b.	b. IF a CCW Pump in train aligned to the service loop can NOT be started, THEN ensure alternate train CCW Pump is operating and shift service loop to alternate CCW train:
	Standard:	Applicant determined alternate train CCW Pump must be started.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Examiner NOTE:	Starting either CCW pump is acceptable. CCW Pump started: <u>A</u> or <u>C</u>
*	Performance Step: 9 5 RNO b.1	Ensure alternate train CCW pump is running.
	Standard:	Applicant started CCW Pump A using handswitch EG HIS-21 to the RUN position. Red Light LIT Green Light EXTINGUISHED OR Applicant started CCW Pump C using handswitch EG HIS-23 to the RUN position. Red Light LIT Green Light EXTINGUISHED
	Cue:	If needed: Respond as Building watch to perform pre-start checks. Pre-start checks are SAT.
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	Main Control Board alarms IN and CLEAR: 51C, CCW PMP A FLOW LO, Or 52C, CCW PMP C FLOW LO, expected based on CCW pump started. Alarm 52B, CCW PMP A/C PRESS LO, expected.

*	Performance Step: 10 5 RNO b.2	Open service loop CCW supply and return valves for train not supplying service loop. * EG ZL-15 AND EG ZL-53 For Train A o EG HS-15
	Standard:	Applicant depressed OPEN pushbutton CCW TRN A SPLY/RETURN VLVS, EG HS-15, until dual indication observed. Red Lights for EG ZL-53 and EG ZL-15 LIT Green Lights for EG ZL-53 and EG ZL-15 EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	MCB alarm 51F, CCW SPLY RTN VLVS MISALIGN, comes in.

*	Performance Step: 11 5 RNO b. 3	Close service loop CCW supply and return valves for train previously supplying service loop. <ul style="list-style-type: none">* EG ZL-16 AND EG ZL-54 For Train B<ul style="list-style-type: none">o EG HS-16
	Standard:	Applicant depressed CLOSE pushbutton CCW TRN B SPLY/RETURN VLVS, EG HS-16, until dual indication observed. Red Lights for EG ZL-54 and EG ZL-16 EXTINGUISHED Green Lights for EG ZL-54 and EG ZL-16 LIT
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	MCB alarm 51F, CCW SPLY RTN VLVS MISALIGN, clears.

	Performance Step: 12 6. a	Ensure CCW Containment Isolation Valves – OPEN a. CCW From RCS Outer Containment Isolation Valve - OPEN <ul style="list-style-type: none">• EG HIS-59
	Standard:	Applicant checked EG HIS-59 OPEN Red Light LIT Green Light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 13 6. b.	b. CCW From RCS Inner Containment Isolation Valve - OPEN <ul style="list-style-type: none">• EG HIS-60
	Standard:	Applicant checked EG HIS-60 OPEN Red Light LIT Green Light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 14 6. c. 1.	c. CCW To RCS Outer Containment Isolation Valve - OPEN 1) EG HIS-58
	Standard:	Applicant checked EG HIS-58 OPEN Red Light LIT Green Light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 15 6. c. 2.	2) EG HIS-71
	Standard:	Applicant checked EG HIS-71 OPEN Red Light LIT Green Light EXTINGUISHED
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 16 7	Check CCW To RCS Flow – GREATER THAN 1.25×10^6 LBM/HR <ul style="list-style-type: none"> • EG FI-128 • EG FI-129
	Standard:	At EG FI-128 and EG FI-129 Applicant determined flow was <ul style="list-style-type: none"> • $\cong 1.3 \text{ E6 LBM/HR}$ for EG FI-128 • $\cong 1.35 \text{ E6 LBM/HR}$ for EG FI-129
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

	Performance Step: 17 8	Return To Procedure And Step In Effect.
	Standard:	JPM complete.
	Cue:	
	Score: SAT or UNSAT	SAT or UNSAT
	Comment:	

Terminating Cue:	JPM Complete. CCW pump 'A' or 'C' started and CCW Service loop transferred to Train 'A'.
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STOP TIME: _____

Job Performance Measure No.:	<u>S8</u>				
Examinee's Name:					
Examiner's Name:					
Date Performed:					
Facility Evaluator:					
Number of Attempts:					
Time to Complete:					
<u>Question Documentation:</u>					
Question:					
Response:					
Result:		SAT		UNSAT	

Examiner's Signature:		Date:	
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INITIAL CONDITIONS:	<p>You are the Reactor Operator.</p> <p>Unit is at 100%.</p> <p>ALR 00-052A, CCW TO RCP FLOW LO, is LIT.</p>
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INITIATING CUE:	<p>The Control Room Supervisor directs you to perform ALR 00-052A, CCW TO RCP FLOW LO.</p>
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Facility: ____ Wolf Creek ____ Scenario No.: ____ 1 ____ Op-Test No.: ____

Examiners: _____ Operators: _____

Initial Conditions: 100%, Middle of Life

Turnover: Motor Driven AFW pump 'A' is tagged out for maintenance activities. Technical Specification (TS) 3.7.5 Condition B.1 (restore AFW train to OPERABLE in 72 hours) was entered. Expected return is 48 hours.

Event No.	Malf. No.	Event Type*	Event Description
1	mBB01F	I SRO ATC	RCS temperature, BB TI-421 (T-cold), fails high. TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 6 and 7, Condition E (72 hours to trip bistables). OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment L.
2	mAB01A 1	I SRO BOP	Steam Generator "A" steam pressure, AB PI-514A, fails low. TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately due to failure) and from Table 3.3.2-1, Fu 1.e and 4.e, Condition D (72 hours to trip bistables). ALR 00-108B, SG A LEV DEV or ALR 00-108C, SG A FLOW MISMATCH and/or OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment C.

3	mBB21B	I SRO ATC	<p>Pressurizer pressure instrument, BB PI-456, fails low.</p> <p>TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 6 and 8, Conditions E and M are entered (both are 72 hours to trip bistables).</p> <p>TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately due to failure) and from Table 3.3.2-1, 1.d, 3.a.3, 5.d, 6.e and 8.b, Conditions D (1.d, 3.a.3, 5.d, 6.e: 72 hours to place channel in bypass) and L (one hour to verify P-11 interlock in correct state) are entered.</p> <p>OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment K.</p>
4	mAE08D	C SRO BOP	<p>Main Feed Regulating Valve "D" fails closed; manual control available using controller AE FK-540.</p> <p>ALR 00-111C, SG D FLOW MISMATCH or ALR 00-111B, SG D LEV DEV.</p>
5	mSG01 mSF15A mSA01B mAL02 bkrDPAL 01B	M SRO ATC BOP	<p>Seismic event with an inadvertent Reactor trip and Safety Injection (SI) signal and a Loss of all Auxiliary Feedwater. (Critical Task (CT) – Establish feedwater flow into at least one SG before RCS bleed and feed is initiated and before SGs dry out.)</p> <p>EMG E-0, REACTOR TRIP OR SAFETY INJECTION, EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK and SYS AP-122, NON-SAFETY AUX FEED PUMP OPERATION.</p>
6	mAC02 C mAC02B	C SRO BOP	<p>Preloaded and post trip: Main turbine fails to trip (auto), manual trip available. BOP depressed both MAIN TURBINE MASTER TRIP "A" and "B" pushbuttons: AC HS-002A and AC HS-002B. (CT – Manual Main Turbine trip)</p> <p>Immediate Action step 2RNO EMG E-0, REACTOR TRIP OR SAFETY INJECTION.</p>
7	mSA27 GN03B mSA27 GN05B	C SRO ATC	<p>Preloaded and post trip: Containment Fan Coolers "A" and "C" are not running in SLOW speed.</p> <p>EMG E-0, REACTOR TRIP OR SAFETY INJECTION, Attachment F.</p>
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

SCENARIO SUMMARY

Turnover and Initial Conditions: Unit is at 100% power, Middle of Life. Motor Driven AFW pump 'A' is tagged out for maintenance activities. Technical Specification (TS) 3.7.5 Condition B.1 (restore AFW train to OPERABLE in 72 hours) was entered. Expected return is 48 hours.

Event 1: Reactor Coolant System (RCS) temperature T-cold instrument BB TI-421 fails high. Control rods step inward. The crew identifies and diagnoses the temperature instrument failure and enters OFN SB-008, INSTRUMENT MALFUNCTIONS. Attachment L, Narrow Range RTD Malfunction, is used to identify and mitigate the instrument failure. Memory Action steps are performed by the BOP (verify no load rejection in progress) and ATC (take rods to manual using SE HS-9). Technical Specifications are identified by the SRO. TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Table 3.3.1-1, Fu 6 and 7 are identified and Conditions A and E are entered.

Event 2: Steam pressure channel for Steam Generator "A", AB PI-514A, fails low. The crew identifies and diagnoses the steam pressure channel failure and enters Alarm Response procedure ALR 00-108B, SG A LEV DEV or ALR 00-108C, SG A FLOW MISMATCH and/or OFN SB-008, INSTRUMENT MALFUNCTIONS. OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment C, Steam Pressure Channel Malfunction, is used to identify and mitigate the instrument failure. Memory action steps are performed by the BOP ("A" Main Feed Regulating Valve placed in manual and Steam Generator level controlled manually). Technical Specifications are identified by the SRO. TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Table 3.3.2-1, Fu 1.e and 4.e are identified and Conditions A and D are entered.

Event 3: Pressurizer (PZR) pressure instrument, BB PI-456, fails low. The crew identifies and diagnoses PZR pressure instrument failure and enters OFN SB-008, INSTRUMENT MALFUNCTIONS. Attachment K, PZR Pressure Malfunction, is used to identify and mitigate the instrument failure. Technical Specifications are identified by the SRO. TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Table 3.3.1-1, Fu 6 and 8 are identified and Conditions A, E and M are entered. TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Table 3.3.2-1, Fu 1.d, 3.a.3, 5.d, 6.e and 8.b are identified and Conditions A, D and L are entered.

Event 4: Steam Generator "D" Main Feed Regulating Valve (MFRV) closes in automatic. The crew identifies and diagnoses the MFRV failure and enters Alarm Response procedure ALR 00-111C, SG D FLOW MISMATCH or ALR 00-111B, SG D LEV DEV, to mitigate the MFRV failure.

Event 5: The Major event is accompanied by a seismic alarm. An Inadvertent Reactor trip and Safety Injection Signal occurs followed by a Loss of all Auxiliary Feedwater. The crew diagnoses the seismic event and Reactor Trip and Safety Injection actuation. The crew enters EMG E-0, REACTOR TRIP OR SAFETY INJECTION.

During the performance of EMG E-0, REACTOR TRIP OR SAFETY INJECTION, the crew diagnoses the Loss of all Auxiliary Feedwater (AFW). At step 8 RNO, the crew ensures the BIT valves are open and transitions to Functional Recovery procedure EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.

Success path for the scenario is accomplished at step 8 of EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, when AFW flow from the Non-Safety Related Auxiliary Feedwater Pump is established to the Steam Generators. SYS AP-122, NON-SAFETY AUX FEED PUMP OPERATION, is performed.

Critical Task (CT) Establish feedwater flow into at least one SG before RCS bleed and feed is initiated and before SGs dry out.

Event 6: Post trip, the BOP determines the Main Turbine failed to trip. The BOP depresses both MAIN TURBINE MASTER TRIP "A" and "B" pushbuttons (AC HS-002A and AC HS-002B) during the performance of Immediate Actions step 2 RNO of EMG E-0, REACTOR TRIP OR SAFETY INJECTION.

Critical Task – Manual Main Turbine trip is performed.

Event 7: Post trip, the ATC/BOP determines that Containment Fan Coolers "A" and "C" are not running in SLOW speed. EMG E-0, REACTOR TRIP OR SAFETY INJECTION, Attachment F, step F8 RNO directs starting the fans in SLOW speed.

SCENARIO TERMINATION:

Successful mitigation of the scenario requires the crew restore secondary heat sink by performance of EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, using the Non-Safety Related Auxiliary Feedwater Pump per procedure SYS AP-122, NON-SAFETY AUX FEED PUMP OPERATION.

CRITICAL TASKS (CT)

Event 5: Establish feedwater flow into at least one SG before RCS bleed and feed is initiated and before SGs dry out (RCS bleed and feed is initiated when 3 of 4 SGs indicate 12% wide range level. SG dryout is indicated by at least 3 SGs with wide range level less than 9%). Restore AFW to the Steam Generators using Non-Safety Related Aux Feed (NSAFW) Pump per procedure SYS AP-122, NON-SAFETY AUX FEED PUMP OPERATION, entered from EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.

Event 6: Manual Main Turbine trip is performed. Manual Main Turbine trip before IR SUR becomes positive and before any RCS cold leg temperature decreases by more than 100°F in a 1-hour period and reaches the T1 limit (240°F) and prior to transition out of EMG E-0. Due to the new design/controls, both MAIN TURBINE MASTER TRIP "A" and "B" pushbuttons (AC HS-002A and AC HS-002B) are manipulated.

TECHNICAL SPECIFICATIONS:

Event 1: Reactor Coolant System (RCS) temperature T-cold instrument BB TI-421 fails high.

- * TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 6 and 7, Condition E (72 hours to trip bistables).

Event 2: Steam pressure channel for Steam Generator "A", AB PI-514A, fails low.

- * TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately due to failure) and from Table 3.3.2-1, Fu 1.e and 4.e, Condition D (72 hours to trip bistables).

Event 3: Pressurizer (PZR) pressure instrument, BB PI-456, fails low.

- * TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 6 and 8, Conditions E and M are entered (both are 72 hours to trip bistables).
- * TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately due to failure) and from Table 3.3.2-1, 1.d, 3.a.3, 5.d, 6.e and 8.b, Conditions D (1.d, 3.a.3, 5.d, 6.e: 72 hours to place channel in bypass) and L (one hour to verify P-11 interlock in correct state) are entered.

PRA/PSA: On March 31, 2013, NE 13-0022 provided the Notice of Probabilistic Risk Assessment (PRA) Model Revision 6.

Scenario	PRA application	Description
Scenario 1	Top Operator Action	Failure to Enter EMG FR-H1 Note: Crew does enter EMG FR-H1 and the success path is to feed the S/Gs using the NSAFW pump.
Scenario 2	Core Damage Frequency (CDF) by Initiating Event Large Early Release Frequency (LERF) by Initiating Event	Switchyard centered LOOP Note: This event is complicated when the only available EDG experiences a fuel failure and the crew enters EMG C-0.
Scenario 3	Core Damage Frequency (CDF) by Initiating Event	Large steamline break outside CTMT

Facility: ____ Wolf Creek ____ Scenario No.: ____ 3 ____ Op-Test No.: ____

Examiners: _____ Operators: _____

Initial Conditions: ~2% power – startup in progress. Beginning of Life.

Turnover: Crew across the hall is being briefed to continue power escalation. Your crew tasked to maintain current plant conditions stable steady state. GEN 00-003, HOT STANDBY TO MINIMUM LOAD, in progress at step 6.39. Main Turbine is not synced to the grid. Pre-heating in service.

Event No.	Malf. No.	Event Type*	Event Description
1	mBB21C	I SRO ATC	<p>Pressurizer (PZR) pressure channel, BB PI-457, fails high.</p> <p>Technical Specification (TS) 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 6 and 8, Condition E (72 hours to trip bistables) are identified.</p> <p>TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.2-1, Fu 1.d, 3.a.3, 5.d, 6.e, and 8.b, Condition D (72 hours to trip bistables) and Condition L (one hour to verify interlock P-11 in correct state) are identified.</p> <p>OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment K.</p>
2	mAE15D 3	I SRO BOP	<p>Steam Generator “D” level channel, AE LI-549 (controlling channel), fails low.</p> <p>TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 14 Condition E (72 hours to trip bistables) is identified.</p> <p>TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.2-1, Fu 5.c and 6.d are identified. Conditions I and D (72 hours to trip bistables) respectively.</p> <p>ALR 00-111B, SG D LEV DEV or ALR 00-111A, SG D LEV HILO and/or OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment F.</p>

3	bkrPB00 301	C SRO ATC	Normal Charging Pump (NCP) trip. ALR 00-042E, CHARGING PMP TROUBLE
4	mAB07B	C SRO BOP	Steam Generator "B" Atmospheric Relief Valve (ARV) fails open, manual closure available. TS 3.7.4, ATMOSPHERIC RELIEF VALVES (ARVs), Condition A (7 days to restore to OPERABLE status). AP 15C-003, PROCEDURE USER'S GUIDE ABNORMAL OPERATIONS, step 6.1.7, or OFN AB-041, STEAM LINE OR FEEDLINE LEAK. Per AP 15C-003 step 6.1.7, the Operator should take manual control when components are not performing correctly.
5	mAB04B	M SRO ATC BOP	"B" Steam Line break outside Containment. (Critical Task (CT) – Isolate Auxiliary Feedwater (AFW) to the Faulted Steam Generator) OFN AB-041, STEAM LINE OR FEEDLINE LEAK, EMG E-0, REACTOR TRIP OR SAFETY INJECTION, EMG E-2, FAULTED STEAM GENERATOR ISOLATION. Time Critical Action (TCA): Isolate Auxiliary Feedwater to a faulted Steam Generator following a Steam Line Break event within twenty minutes (AI 21-016, OPERATOR TIMED CRITICAL ACTION VALIDATION, Attachment A, Time Critical Action List.)
6	mNB01 mEF05A	C SRO ATC	Preloaded and post trip: Emergency Bus NB01 trips, Emergency Diesel Generator (EDG) "A" starts and loads. (CT – Manually start Essential Service Water pump 'A') Essential Service Water (ESW) "A" autostart failure, manual start available. AP 15C-003, PROCEDURE USER'S GUIDE ABNORMAL OPERATIONS, step 6.1.7 or EMG E-0, REACTOR TRIP OR SAFETY INJECTION, Attachment F. Per AP 15C-003 step 6.1.7, the Operator should take manual control when components are not performing correctly.

7	bkrDPE G01B mEG14 D	C SRO ATC	<p>Preloaded and post trip: Component Cooling Water (CCW) trip of "B" pump. CCW "D" autostart defeated, manual start available. (CT – Manually start at least one CCW pump in the train with required ECCS equipment operating)</p> <p>AP 15C-003, PROCEDURE USER'S GUIDE ABNORMAL OPERATIONS, step 6.1.7 or EMG E-0, REACTOR TRIP OR SAFETY INJECTION, Attachment F.</p> <p>Per AP 15C-003 step 6.1.7, the Operator should take manual control when components are not performing correctly.</p>
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

SCENARIO SUMMARY

Turnover and Initial Conditions: ~2% power – startup in progress. Beginning of Life. Crew across the hall is being briefed to continue power escalation. Your crew tasked to maintain current plant conditions stable steady state. GEN 00-003, HOT STANDBY TO MINIMUM LOAD, in progress at step 6.39. Main Turbine is not synced to the grid. Pre-heating in service.

Event 1: Pressurizer (PZR) pressure channel, BB PI-457, fails high. The crew identifies and diagnoses the failure and enters OFN SB-008, INSTRUMENT MALFUNCTIONS. OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment K, PZR Pressure Malfunction, is used to identify and mitigate the instrument failure. Memory Action steps are performed by the ATC (identify failed channel, select manual on PZR Pressure Master Controller, control pressure and select out the failed channel). Technical Specifications are identified by the SRO. TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 6 and 8, Condition E (72 hours to trip bistables) are identified. TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.2-1, Fu 1.d, 3.a.3, 5.d, 6.e, and 8.b, Condition D (72 hours to trip bistables) and Condition L (one hour to verify interlock P-11 in correct state) are identified.

Event 2: Steam Generator “D” controlling level channel, AE LI-549, fails low. The crew identifies and diagnoses the level channel failure and enters Alarm Response procedure ALR 00-111B, SG D LEV DEV or ALR 00-111A, SG D LEV HILO and/or OFN SB-008, INSTRUMENT MALFUNCTIONS. OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment F, S/G Level Channel Malfunction, is used to identify and mitigate the instrument failure. Memory Action steps are performed by the BOP (identify the failed instrument, place “D” Feed Regulating Bypass Valve in manual and control Steam Generator level manually). Technical Specifications are identified by the SRO. TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 14 Condition E (72 hours to trip bistables) is identified. TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.2-1, Fu 5.c and 6.d are identified. Conditions I and D (72 hours to trip bistables) are entered respectively.

Event 3: Normal Charging Pump (NCP) trip. The crew identifies and diagnoses the NCP trip and enters ALR 00-042E, CHARGING PMP TROUBLE, to mitigate the component failure. A Memory Action is performed by the ATC (isolate letdown by closing any open Letdown Orifice Isolation valves). A Centrifugal Charging pump is started and letdown re-established per actions of ALR 00-042E.

Event 4: Steam Generator “B” Atmospheric Relief Valve (ARV) fails open, manual closure available. The crew identifies and diagnoses the failure. The BOP closes the open ARV using AB-PIC-2A, SG B STEAM DUMP TO ATMS CTRL, per procedure AP 15C-003, step 6.1.7 or OFN AB-041, STEAM LINE OR FEEDLINE LEAK, step 5. Technical Specifications are identified by the SRO. TS 3.7.4, ATMOSPHERIC RELIEF VALVES (ARVs), Condition A (7 days to restore to OPERABLE status).

AP 15C-003, PROCEDURE USER'S GUIDE ABNORMAL OPERATIONS, step 6.1.7, allows the Operator to take manual control of components not performing their intended function.

Event 5: Major event: A $1.2 \text{ E}+6 \text{ lb/hr}$ “B” Steam Line break outside Containment occurs. The crew identifies the Steam Line break outside Containment and may enter OFN AB-041, STEAM LINE OR FEEDLINE BREAK, to mitigate the consequences; however, a Reactor trip and Safety Injection are required and performed. The crew enters EMG E-0, REACTOR TRIP OR SAFETY INJECTION. The Main Steam Isolation Valves are closed, and Steam Generator “B” is identified as the faulted Steam Generator. Auxiliary Feedwater is isolated to the faulted Steam Generator per EMG E-0 REACTOR TRIP

OR SAFETY INJECTION's Foldout page criteria #3, Faulted S/G Isolation Criteria. The crew transitions to EMG E-2, FAULTED STEAM GENERATOR ISOLATION and based on plant conditions transitions to EMG ES-03, SI TERMINATION or EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT.

Critical Task (CT) Isolate Auxiliary Feedwater (AFW) to the Faulted Steam Generator before completion of EMG E-2.

Event 6: Post trip, Emergency Bus NB01 trips, Emergency Diesel Generator (EDG) "A" starts and loads. Essential Service Water (ESW) "A" autostart failure, manual start available. The ATC diagnoses ESW "A" must be started in order to supply cooling water to EDG "A" and the NB01 loads. ESW "A" is started using handswitch EF HIS-55A per AP 15C-003, PROCEDURE USER'S GUIDE ABNORMAL OPERATIONS, step 6.1.7 or EMG E-0, REACTOR TRIP OR SAFETY INJECTION, Attachment F, Automatic Signal Verification, step F7 RNO.

Critical Task to manually start Essential Service Water pump 'A' is performed. Manually start at least the minimum required number of ESW pumps in an operating safeguards train before required Diesel Generator(s) trip or before the completion of Attachment F of EMG E-0).

Event 7: Post trip: Component Cooling Water (CCW) "B" pump trips. CCW "D" autostart is defeated, however manual start available using handswitch EG HIS-24. The ATC diagnoses the lack of running Component Cooling Water pumps. CCW "D" pump must be started in order to supply cooling water to safeguard components e.g. Centrifugal Charging Pump oil coolers, Safety Injection pump oil coolers etc.

AP 15C-003, PROCEDURE USER'S GUIDE ABNORMAL OPERATIONS, step 6.1.7 or EMG E-0, REACTOR TRIP OR SAFETY INJECTION, Attachment F, Automatic Signal Verification, step F6 RNO.

Critical Task to manually start at least one CCW pump in the train with required ECCS equipment operating before completion of Attachment F of EMG E-0.

SCENARIO TERMINATION

Successful mitigation of the scenario requires the faulted Steam Generator is isolated and based on plant conditions, transition to EMG ES-03, SI TERMINATION or EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT.

CRITICAL TASKS (CT):

Event 5: Isolate Auxiliary Feedwater (AFW) to the Faulted Steam Generator before completion of EMG E-2 is performed. Auxiliary Feedwater is isolated to the Faulted Steam Generator per EMG E-0 REACTOR TRIP OR SAFETY INJECTION's Foldout page criteria #3, Faulted S/G Isolation Criteria. When the crew transitions to EMG E-2, FAULTED STEAM GENERATOR ISOLATION, actions will be performed to ensure the faulted Steam Generator is isolated. Foldout #3 from EMG E-0: Main Steam Isolation valves are closed (not critical). Critical: To isolate AFW: the BOP closes AL HK-9A, SG B MD AFP AFW REG VLV CTRL and AL HK-10A, SG B TD AFP AFW REG VLV CTRL.

Event 6: Manually start at least the minimum required number of ESW pumps in an operating safeguards train before required Diesel Generator(s) trip, e.g. EDG 'A' or before the completion of Attachment F of EMG E-0. ESW PUMP A handswitch EF HIS-55A is manipulated to RUN position, starting ESW 'A' pump before the EDG 'A' trips.

Event 7: Manually start at least one CCW pump in the train with required ECCS equipment operating before completion of Attachment F of EMG E-0. "Bravo" train CCW pump "D" is started. Manipulate CCW PUMP D handswitch EG HIS-24 to RUN position, starting CCW 'D' pump, providing cooling water to ECCS loads.

TECHNICAL SPECIFICATIONS:

Event 1: Pressurizer (PZR) pressure channel, BB PI-457, fails high.

- * TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 6 and 8, Condition E (72 hours to trip bistables) are identified.
- * TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.2-1, Fu 1.d, 3.a.3, 5.d, 6.e, and 8.b, Condition D (72 hours to trip bistables) and Condition L (one hour to verify interlock P-11 in correct state) are identified.

Event 2: Steam Generator "D" controlling level channel, AE LI-549, fails low. TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 14 Condition E (72 hours to trip bistables) is identified. TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.2-1, Fu 5.c and 6.d are identified. Conditions I and D (72 hours to trip bistables) are entered respectively.

Event 4: Steam Generator "B" Atmospheric Relief Valve (ARV) fails open, manual closure available. TS 3.7.4, ATMOSPHERIC RELIEF VALVES (ARVs), Condition A (7 days to restore to OPERABLE status).

PRA/PSA: On March 31, 2013, NE 13-0022 provided the Notice of Probabilistic Risk Assessment (PRA) Model Revision 6.

Scenario	PRA application	Description
Scenario 1	Top Operator Action	Failure to Enter EMG FR-H1 Note: Crew does enter EMG FR-H1 and the success path is to feed the S/Gs using the NSAFW pump.
Scenario 2	Core Damage Frequency (CDF) by Initiating Event Large Early Release Frequency (LERF) by Initiating Event	Switchyard centered LOOP Note: This event is complicated when the only available EDG experiences a fuel failure and the crew enters EMG C-0.
Scenario 3	Core Damage Frequency (CDF) by Initiating Event	Large steamline break outside CTMT

TIME CRITICAL/TIME SENSITIVE ACTIONS:

Per AI 21-016, OPERATOR TIME CRITICAL ACTIONS VALIDATION, form AIF 21-016-02, Time Verification Form, will be used to capture the completion time and routed to Operations Support and Safety Analysis for review.

Time Critical Action (TCA): Isolate Auxiliary Feedwater to a faulted Steam Generator following a Steam Line Break event within twenty minutes (AI 21-016, OPERATOR TIMED CRITICAL ACTION VALIDATION, Attachment A, Time Critical Action List.)

Facility: ____ Wolf Creek ____ Scenario No.: ____ 4 ____ Op-Test No.: ____

Examiners: _____ Operators: _____

Initial Conditions: 100%, Beginning of Life.

Turnover: Motor Driven Auxiliary Feedwater Pump (MDAFW) "A" tagged out for preventative maintenance activities. Technical Specification (TS) 3.7.5 Condition B.1 (restore AFW train to OPERABLE in 72 hours) was entered. Expected return is 24 hours.

Event No.	Malf. No.	Event Type*	Event Description
1	mBB22A	I SRO ATC	Pressurizer (PZR) level channel, BB PI-459, fails low. Technical Specification (TS) 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 9, Condition M (72 hours to trip bistables) is identified. OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment J.
2	mAE12C	I SRO BOP	Steam Generator "B" feed flow controlling channel, AE FT-520, fails high. ALR 00-109C, SG B FLOW MISMATCH, ALR 00-109B, SG B LEV DEV and/or OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment E.
3	bkrWS01PA	C SRO ATC	Service Water Pump "A" trip. Technical Requirement Manual (TRM) 3.7.8, SERVICE WATER SYSTEM, Condition A (60 days to restore to FUNCTIONAL status) ALR 00-009B, SERV WTR PMP TRIP or ALR 00-008B, SERV WTR PRESS HI LO.

4	mAB01C 2	I SRO BOP	<p>Steam Generator "C" controlling pressure channel, AB PI-535A, fails high.</p> <p>TS 3.3.2, ENGINEERED SAFETY FEATURES INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.2-1, Fu 1.e and 4.e, Condition D (72 hours to trip bistables respectively) are identified.</p> <p>ALR 110C, SG C FLOW MISMATCH, ALR 00-110B, SG C LEV DEV and/or OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment C.</p>
5		R SRO ATC BOP	<p>Reactivity event: Shift Manager declares Motor Driven Auxiliary Feedwater Pump "B" INOPERABLE but AVAILABLE.</p> <p>TS 3.7.5, Condition C, (Two AFW trains inoperable), Required Action C.1 (Be in MODE 3 within six hours).</p> <p>Crew utilizes pre-shift 10% downpower brief or OFN MA-038, RAPID PLANT SHUTDOWN.</p>
6	mBB06C	M SRO ATC BOP	<p>600 gpm Cold Leg break, Loop "C" – Loss Of Coolant Accident (LOCA).</p> <p>OFN BB-007, RCS LEAKAGE HIGH; EMG E-0, REACTOR TRIP OR SAFETY INJECTION; EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT; then based on plant conditions transitions to EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION.</p>
7	mAL01 rAL11 rAL09	C SRO BOP	<p>Preloaded and post trip: Turbine Driven Auxiliary Feedwater Pump (TDAFP) autostart failure, manual start available. MDAFW "B" AFW discharge to Steam Generator's "A" and "D" throttled. (Critical Task (CT) – Establish 270, 000 lbm/hr Auxiliary Feedwater flow before completion of Attachment F of EMG E-0.)</p> <p>AP 15C-003, PROCEDURE USER'S GUIDE ABNORMAL OPERATIONS, step 6.1.7 or EMG E-0, REACTOR TRIP OR SAFETY INJECTION, step 8, RNO b. or Attachment F.</p> <p>Per AP 15C-003 step 6.1.7, the Operator should take manual control when components are not performing correctly.</p>

8	mSA18B mSA23B mSA27 GS16 mSA27 GS17	C SRO ATC	<p>Preloaded and post trip: Train "Bravo" CPIS and CISA autostart failure, manual actuation available; however, CTMT ATMS MONITOR SPLY CTMT ISO VLV, GS HIS-36 and CTMT ATMS MONITOR RETURN CTMT ISO VLV, GS HIS-34, remain open, manual closure available. (CT – Close containment isolation valves such that at least one valve is closed on each critical phase-A penetration before completion of Attachment F of EMG E-0.)</p> <p>EMG E-0, REACTOR TRIP OR SAFETY INJECTION, Attachment F.</p>
<p>* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor</p>			

SCENARIO SUMMARY

Turnover and Initial Conditions: Unit is at 100%. Beginning of Life. Motor Driven Auxiliary Feedwater Pump (MDAFW) "A" tagged out for preventative maintenance activities. Technical Specification (TS) 3.7.5 Condition B.1 (restore AFW train to OPERABLE in 72 hours) was entered. Expected return is 24 hours.

Event 1: Pressurizer (PZR) level channel, BB PI-459, fails low. The crew identifies and diagnoses the failure and enters OFN SB-008, INSTRUMENT MALFUNCTIONS. OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment J, PZR Level Channel Malfunction, is used to identify and mitigate the instrument failure. Technical Specifications are identified by the SRO. TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 9, Condition M (72 hours to trip bistables) is identified.

Event 2: Steam Generator "B" feed flow controlling channel, AE FT-520, fails high. The crew identifies and diagnoses the failure and enters either ALR 00-109C, SG B FLOW MISMATCH, ALR 00-109B, SG B LEV DEV, and/or OFN SB-008, INSTRUMENT MALFUNCTIONS. OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment E, Feedwater Flow Channel Malfunction is used to identify and mitigate the instrument failure. Memory Action steps are performed by the BOP (identify the failed instrument, place Main Feed Regulating Valve, AE FK-520, in manual and control Steam Generator level).

Event 3: Service Water Pump "A" trip. The crew identifies and diagnoses Service Water Pump "A" trip and enters either ALR 00-009B, SERV WTR PMP TRIP, or ALR 00-008B, SERV WTR PRESS HI LO, to mitigate the component failure. A standby Service Water Pump is started to establish discharge pressure greater than 85 psig. The SRO identifies Technical Requirement (TR) 3.7.8, SERVICE WATER SYSTEM, Condition A (60 days to restore to FUNCTIONAL status).

Event 4: Steam Generator "C" controlling pressure channel, AB PI-535A, fails high. The crew identifies and diagnoses the failure and enters ALR 110C, SG C FLOW MISMATCH, ALR 00-110B, SG C LEV DEV and/or OFN SB-008, INSTRUMENT MALFUNCTIONS. OFN SB-008, INSTRUMENT MALFUNCTIONS Attachment C, SG Pressure Channel Malfunction is used to identify and mitigate the instrument failure. Memory actions are performed by the BOP (identify the failure, place "C" Main Feed Regulating Valve, AE FK-530, in manual, and control Steam Generator level). Technical Specifications are identified by the SRO. TS 3.3.2, ENGINEERED SAFETY FEATURES INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.2-1, Fu 1.e and 4.e, Condition D (72 hours to trip bistables respectively) are identified.

Event 5: Reactivity event: The Shift Manager (cue) informs the Control Room Supervisor that Motor Driven Auxiliary Feedwater Pump "B" has been declared INOPERABLE but AVAILABLE. The SRO determines per Technical Specification 3.7.5, Condition C, (Two AFW trains inoperable), Action C.1 (Be in MODE 3 within six hours), that a downpower must be initiated. If the pre-shift brief for a 10% downpower is not begun, the Shift Manager cues that the crew downpower using OFN MA-038, RAPID PLANT SHUTDOWN.

Event 6: Major event: 600 gpm Cold Leg break, Loop "C" – Loss Of Coolant Accident (LOCA). Once the downpower is initiated, a 600 gpm LOCA occurs. The crew diagnoses the LOCA per OFN BB-007, RCS LEAKAGE HIGH, and determines that a Reactor Trip and Safety Injection must be actuated. The crew enters EMG E-0, REACTOR TRIP OR SAFETY INJECTION. The crew will transition to EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT and then based on plant conditions, transition to EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION or EMG ES-03, SI TERMINATION.

Event 7: Preloaded and post trip: Turbine Driven Auxiliary Feedwater Pump (TDAFW) autostart failure, manual start available. MDAFW "B" AFW discharge to Steam Generator's "A" and "D" are throttled. The BOP diagnoses the TDAFW pump did not autostart and that MDAFW "B" discharge to Steam Generators "A" and "D" is low. AFW total flow must be greater than 270,000 lbm/hr until narrow range level in at least one Steam Generator is greater than 6%. TDAFW pump must be started manually from the Control Room.

Critical Task: Establish 270, 000 lbm/hr Auxiliary Feedwater flow before completion of Attachment F of EMG E-0.

AP 15C-003, PROCEDURE USER'S GUIDE ABNORMAL OPERATIONS, step 6.1.7 or EMG E-0, REACTOR TRIP OR SAFETY INJECTION, step 8 RNO b (start the pumps and throttle AFW) and/or Attachment F, Automatic Signal Verification, step F4 RNO b (starts TDAFW pump).

Event 8: Preloaded and post trip: Train "Bravo" CPIS and CISA autostart failure occurs; however, manual actuation available using SA HS-15 and SB HS-48 respectively; additionally, upon manual actuation, CTMT ATMS MONITOR SPLY CTMT ISO VLV, GS HV-36 and CTMT ATMS MONITOR RETURN CTMT ISO VLV, GS HV-34, remain open, manual closure available using GS HIS-36 and GS HIS-34.

Per EMG E-0, REACTOR TRIP OR SAFETY INJECTION, Attachment F, Automatic Signal Verification, step F3 RNOa, the ATC actuates CISA for Train "Bravo" using SB HS-48 and at step F9 RNOa actuates CPIS, SA HS-15 for Train "Bravo" and closes GS HV-36 and GS HV-34, isolating Containment.

Critical Task: Close containment isolation valves such that at least one valve is closed on each critical phase-A penetration before completion of Attachment F of EMG E-0.

SCENARIO TERMINATION:

Successful mitigation of the scenario requires the crew identify and mitigate the LOCA per EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT and then based on plant conditions, transition to EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION or EMG ES-03, SI TERMINATION.

CRITICAL TASKS (CT):

Event 7: Establish 270, 000 lbm/hr Auxiliary Feedwater (AFW) flow before completion of Attachment F of EMG E-0. NOTE: AFW total flow must be greater than 270,000 lbm/hr until narrow range level in at least one Steam Generator is greater than 6%. TDAFW pump must be started manually from the Control Room.

Event 8: Close containment isolation valves such that at least one valve is closed on each critical phase-A penetration before completion of Attachment F of EMG E-0. Close CTMT ATMS MONITOR SPLY CTMT ISO VLV, GS HV-36 and CTMT ATMS MONITOR RETURN CTMT ISO VLV, GS HV-34, isolating Containment.

Event 1: Pressurizer (PZR) level channel, BB PI-459, fails low. TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 9, Condition M (72 hours to trip bistables) is identified.

Event 4: Steam Generator “C” pressure channel, AB PI-535A, fails high. TS 3.3.2, ENGINEERED SAFETY FEATURES INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.2-1, Fu 1.e and 4.e, Condition D (72 hours to trip bistables respectively) are identified.

PRA/PSA: On March 31, 2013, NE 13-0022 provided the Notice of Probabilistic Risk Assessment (PRA) Model Revision 6.

* Service Water see Scenario 4

Op-Test No.: _____	Scenario No.: <u>1</u>	Event No.: <u>1</u>	Page <u>1</u> of <u>26</u>						
Event Description: <u>RCS temperature Loop 2, BB TI-421 (T-cold), fails high.</u>									
Time	Position	Applicant's Actions or Behavior							
Simulator Operator: Insert Key 1 at Lead Examiner direction. Diagnostics: Control rods step inward. RCS pressure decrease. Loop 2 Reactor Coolant Tavg meter increases. Loop 2 Reactor Coolant OTDT Setpoint and DT meters decrease. Main Control Board (MCB) alarms actuate: 65C and 65E, 66D, 67B, 68D and 69D.									
	SRO, ATC, BOP	Crew diagnoses instrument failure. BOP and ATC perform Memory Action steps of OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment L, NARROW RANGE RTD MALFUNCTION.							
	BOP	(Memory Action) At OVATION control, screen 5551, BOP determined No Runback in progress. <ul style="list-style-type: none"> Generator Load MW are stable 							
	ATC	(SRO direction/Memory Action) Using SE HS-9, ROD BANK AUTO/MAN SEL, ATC rotates from AUTO to MAN position. Inward rod motion stopped. Possible Critical Task (PCT): Place rods in MAN position, using SE HS-9, stopping inward motion. EXAMINER NOTE: If rod motion is not stopped, a PZR PRESS LO RX TRIP reactor trip occurs. (1940 psig, 2/4, automatically blocked below P-7)							
	SRO, ATC, BOP	Enter and Perform OFN SB-008, rev 35, INSTRUMENT MALFUNCTIONS SRO directs OFN SB-008, INSTRUMENT MALFUNCTIONS							
	SRO, ATC	1. Check for malfunction: <ul style="list-style-type: none"> * Check If Reactor Coolant System Instrument Channel Or Controller Is Malfunctioning: <ul style="list-style-type: none"> a. Perform appropriate attachment for malfunctioning channel or controller from table below: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 33%;">Variable</td> <td style="width: 33%;">Channels</td> <td style="width: 33%;">Attachment</td> </tr> <tr> <td>RCS Temperature</td> <td>T-411, T-421, T-431, T-441</td> <td>Attachment L</td> </tr> </table>		Variable	Channels	Attachment	RCS Temperature	T-411, T-421, T-431, T-441	Attachment L
Variable	Channels	Attachment							
RCS Temperature	T-411, T-421, T-431, T-441	Attachment L							
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status.									
NOTE: Steps L1 and L2 are Memory Action steps.									
	BOP	L1 Check Load rejection - NOT IN PROGRESS <ul style="list-style-type: none"> Generator Load MW – STABLE EXAMINER NOTE: Memory Action was performed earlier.							

Op-Test No.: _____ Scenario No.: 1 Event No.: 1Page 2 of 26Event Description: RCS temperature Loop 2, BB TI-421 (T-cold), fails high.

Time	Position	Applicant's Actions or Behavior									
	SRO, ATC	L2. Switch ROD BANK AUTO/MAN SEL Switch To – MANUAL <ul style="list-style-type: none"> SE HS-9 EXAMINER NOTE: Memory Action was performed earlier.									
	SRO, BOP	L3. Check Steam Dumps: <ol style="list-style-type: none"> Check STEAM DUMP SEL Switch – IN TAVG MODE <ul style="list-style-type: none"> AB US-500Z Check Steam Dumps - CLOSED 									
	SRO, ATC	L4. Identify Failed Instrument Channel: <ol style="list-style-type: none"> Compare loop Tavg and ΔT indications to confirm a NR RTD failure: <table border="1"> <thead> <tr> <th>LOOP</th> <th>FUNCTION</th> <th>INDICATION</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>ΔT</td> <td>BB TI-421A</td> </tr> <tr> <td></td> <td>TAVG</td> <td>BB TI-422</td> </tr> </tbody> </table> 	LOOP	FUNCTION	INDICATION	2	ΔT	BB TI-421A		TAVG	BB TI-422
LOOP	FUNCTION	INDICATION									
2	ΔT	BB TI-421A									
	TAVG	BB TI-422									
	SRO, ATC	L5. Remove Failed Temperature Channel From Tavg and ΔT Auctioneering Circuits, Using DELTA T DEFEAT And ROD CTRL T AVG INPUT CHANNEL DEFEAT Switches <ul style="list-style-type: none"> BB TS-411F BB TS-412T EXAMINER NOTE: T421 selected both switches. When circuits are defeated, MCB alarms clear. 67B and 67C remain.									
	SRO, ATC	L6. Check (Tavg/Tref) Error Signal Within 1°F, If No, Perform RNO L6. RNO (ρ) Manually adjust control rod position, to control Tavg within 1°F of Tref									
NOTE: It may take several minutes for power and temperature rate circuitry outputs to return to normal before switching back to automatic rod control.											
	SRO, ATC	L7. Check ROD BANK AUTO/MAN SEL Switch In Auto. If No, Perform RNO. <ul style="list-style-type: none"> SE HS-9 L7. RNO (ρ) WHEN Tavg is within 1°F of Tref, THEN place ROD BANK AUTO/MAN SEL switch in auto, if desired. <ul style="list-style-type: none"> SE HS-9 									

Op-Test No.: _____ Scenario No.: 1 Event No.: 1Page 3 of 26Event Description: RCS temperature Loop 2, BB TI-421 (T-cold), fails high.

Time	Position	Applicant's Actions or Behavior
	SRO, ATC	L8. Monitor Rod Control System Response To Ensure Proper Control
	SRO, ATC, BOP	L9. Check C-7 Loss Of Load Interlock – NOT LIT
	SRO, BOP	L10. Check STEAM DUMP BYPASS INTERLOCK Switches In – ON <ul style="list-style-type: none"> • AB HS-63 • AB HS-64
	SRO, BOP	L11. Monitor Steam Dump Control System To Ensure Proper Operation
	SRO, ATC, BOP	L12. Check Failed Temperature Channel Not Selected On OPDT/OT DT LOOP RECORD SEL; If No, Perform RNO <ul style="list-style-type: none"> • SC TS-411E L12. RNO. Select alternate temperature channel for input to recorder.
	SRO	L13. Monitor The Following Technical Specification LCOs And Comply With Action Statements, As Appropriate: <ul style="list-style-type: none"> • 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Table 3.3.1-1, Functions 6 and 7 SRO identifies: TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 6 and 7, Condition E (72 hours to trip bistables)
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status.		
Event termination: Instrument failure identified; SRO identified applicable Technical Specifications or at Lead Examiner Discretion.		
Simulator Operator: Insert Key 2 at direction of Lead Examiner.		

Op-Test No.: _____	Scenario No.: <u>1</u>	Event No.: <u>2</u>	Page <u>4</u> of <u>26</u>
Event Description: <u>Steam Generator "A" steam pressure, AB PI-514A, fails low.</u>			
Time	Position	Applicant's Actions or Behavior	
Simulator Operator: Insert Key 2 at direction of Lead Examiner.			
Diagnostics: Meter SG A PRESS, AB PI-514A, decreasing to zero. Main Control Board alarms 00-108C, SG A FLOW MISMATCH and 00-108B, SG A LEV DEV, annunciate.			
	SRO, BOP, ATC	Crew diagnoses instrument failure. BOP performs Memory Actions of either ALR 00-108C, SG A FLOW MISMATCH; 00-108B, SG A LEV DEV; or OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment C, SG PRESSURE CHANNEL MALFUNCTION.	
	BOP	(SRO direction/Memory Action) Places SG A MFW REG VLV CTRL, AE FK-510, in Manual and depresses UP ARROW pushbutton, matching steam flow and feed flow. PCT: BOP takes manual control using AE FK-510, adjusts and matches steam and feed flow. EXAMINER NOTE: Without Operator action, a SG LEV LOLO RX TRIP occurs. (23.5% NR level, 2/4 on 1/4 SGs)	
	SRO, ATC, BOP	Enter and Perform ALR 00-108C, rev 9A, SG A FLOW MISMATCH; or ALR 00-108B, rev 9, SG A LEV DEV. SRO directs the ALR.	
EXAMINER NOTE: ALR 108C and 108B are very similar. As 108B is the higher tier ALR, only 108B is presented.			
NOTE: Steps 1 through 3 are Memory Action steps.			
	SRO, BOP, ATC	1. Check Steam Generator A Controlling Level Channel: * 5% GREATER THAN PROGRAM LEVEL OR * 5% LESS THAN PROGRAM LEVEL	
	SRO, ATC, BOP	2. Check Instruments – OPERATING PROPERLY; If No, Perform RNO <ul style="list-style-type: none"> • Steam Generator A Controlling Level Channel – WITHIN 6% OF REMAINING S/G A NARROW RANGE LEVEL CHANNELS <ul style="list-style-type: none"> * AE LI-559 * AE LI-551 • Steam Generator A Controlling Steam Pressure Channel – WITHIN 100 PSIG OF REMAINING CHANNELS; No, Perform RNO <ul style="list-style-type: none"> * AB PI-514A * AB PI-515A 	

Op-Test No.: _____ Scenario No.: 1 Event No.: 2Page 5 of 26Event Description: Steam Generator "A" steam pressure, AB PI-514A, fails low.

Time	Position	Applicant's Actions or Behavior						
	SRO, BOP	2 RNO Perform the following: a. Place Feedwater Reg Valve or Feedwater Reg Bypass Control Valve in manual. * AE FK-510 * AE LK-550 PCT: BOP takes manual control using AE FK-510, adjusts and matches steam and feed flow.						
	SRO, BOP	2 RNO b. Adjust Feedwater Reg Valve or Feedwater Reg Bypass Control Valve, as necessary, to establish Steam Generator level at program value. * AE FK-510 * AE LK-550 PCT: BOP takes manual control using AE FK-510, adjusts and matches steam and feed flow. EXAMINER NOTE: Without Operator action, a SG LEV LOLO RX TRIP occurs. (23.5% NR level, 2/4 on 1/4 SGs)						
	SRO, BOP	2 RNO c. Go to OFN SB-008, INSTRUMENT MALFUNCTIONS, step 1.						
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status.								
EXAMINER NOTE: The crew may enter OFN SB-008, INSTRUMENT MALFUNCTIONS, directly.								
	SRO, BOP, ATC	Enter and Perform OFN SB-008, INSTRUMENT MALFUNCTIONS SRO directs OFN SB-008, INSTRUMENT MALFUNCTIONS						
	SRO, ATC, BOP	1. Check For Malfunction: * Check If Secondary System Instrument Channel Is Malfunctioning: a. Perform appropriate attachment for malfunctioning channel from table below <table border="1"> <thead> <tr> <th>VARIABLE</th> <th>CHANNEL</th> <th>ATTACHMENT</th> </tr> </thead> <tbody> <tr> <td>S/G Pressure (AB)</td> <td>P-514, P-515, P-516 P-524, P-525, P-526 P-534, P-535, P-536 P-544, P-545, P-546</td> <td>ATTACHMENT C</td> </tr> </tbody> </table>	VARIABLE	CHANNEL	ATTACHMENT	S/G Pressure (AB)	P-514, P-515, P-516 P-524, P-525, P-526 P-534, P-535, P-536 P-544, P-545, P-546	ATTACHMENT C
VARIABLE	CHANNEL	ATTACHMENT						
S/G Pressure (AB)	P-514, P-515, P-516 P-524, P-525, P-526 P-534, P-535, P-536 P-544, P-545, P-546	ATTACHMENT C						
CAUTION: SG steam pressure is an input to the thermal power program. A failed steam pressure channel could cause the thermal power program to be inaccurate. NOTES: <ul style="list-style-type: none"> Steps C1 through C3 are Memory Action steps. A steam flow channel compensated by failed pressure channel will affect Main Feed pump speed until the failed channel is selected out. 								

Op-Test No.: _____ Scenario No.: 1 Event No.: 2Page 6 of 26Event Description: Steam Generator "A" steam pressure, AB PI-514A, fails low.

Time	Position	Applicant's Actions or Behavior						
	SRO, BOP, ATC	C1. Identify Failed Instrument Channel: <ul style="list-style-type: none"> Compare S/G pressure Indications To Confirm S/G Pressure Channel Failure: <ul style="list-style-type: none"> AB PI-514A For S/G A AB PI-515A For S/G A AB PI-516A For S/G A 						
	SRO, BOP	C2. Check If Failed S/G Pressure Channel Used For Feedwater Control: <p>a. Identify steam flow channel compensated by failed pressure channel from table below:</p> <table border="1"> <thead> <tr> <th>S/G</th><th>STEAM PRESSURE CHANNEL</th><th>ASSOCIATED STEAM FLOW CHANNEL</th></tr> </thead> <tbody> <tr> <td>A</td><td>P-514 P-515</td><td>F-512 F-513</td></tr> </tbody> </table>	S/G	STEAM PRESSURE CHANNEL	ASSOCIATED STEAM FLOW CHANNEL	A	P-514 P-515	F-512 F-513
S/G	STEAM PRESSURE CHANNEL	ASSOCIATED STEAM FLOW CHANNEL						
A	P-514 P-515	F-512 F-513						
	SRO, BOP	C2. b Check steam flow channel associated with failed steam pressure channel selected on SG STEAM FLOW CHANNEL SEL Switch EXAMINER NOTE: Selector switch AB FS-512C has F-512 selected. P-514 corresponds to F-512.						
	SRO, BOP	C3. Check Main Feed Red Valves In Control: <p>a. Place Affected SG MFW REG VLV CTRL – IN MANUAL</p> <p>* AE FK-510</p> <p>PCT: BOP takes manual control using AE FK-510, adjusts and matches steam and feed flow.</p>						
	SRO, BOP	b. Adjust affected S/G MFW REG VLV CTRL, as necessary, to establish Steam Generator level at program. <p>* AE FK-510</p> <p>PCT: BOP takes manual control using AE FK-510, adjusts and matches steam and feed flow.</p> <p>EXAMINER NOTE: Without Operator action, a SG LEV LOLO RX TRIP occurs. (23.5% NR level, 2/4 on 1/4 SGs)</p>						
	SRO, BOP	C4. Select Alternate Steam Flow Channel On SG STEAM FLOW CHANNEL SEL Switch: <ul style="list-style-type: none"> AB FS-512C <p>EXAMINER NOTE: Channel F513 is selected as the alternate channel on switch AB FS-512C. MCB alarm 108C clears.</p>						

Op-Test No.: _____ Scenario No.: 1 Event No.: 2Page 7 of 26Event Description: Steam Generator "A" steam pressure, AB PI-514A, fails low.

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	<p>C5. Restore Affected SG MFW REG VLV CTRL To – AUTO</p> <p>EXAMINER NOTE: AUTO pushbutton depressed, restoring AE FK-510 to automatic control. MCB alarm 108B clears upon restoration of SG level to program band (45% - 55%).</p>
	SRO	<p>C6. Monitor The Following Technical Specifications LCOs And Comply With Action Statements, As Appropriate:</p> <ul style="list-style-type: none"> 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION, Table 3.3.2-1, Functions 1.e And 4.e 3.3.4, REMOTE SHUTDOWN INSTRUMENTATION, Table 3.3.4-1, Function 7 3.3.3, POST ACCIDENT MONITORING INSTRUMENTATION, Table 3.3.3-1, Function 8 3.3.6, CONTAINMENT PURGE ISOLATION INSTRUMENTATION 3.3.7, CONTROL ROOM EMERGENCY VENTILATION SYSTEM ACTUATION INSTRUMENTATION <p>SRO identifies:</p> <ul style="list-style-type: none"> TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately due to failure) and from Table 3.3.2-1, Fu 1.e and 4.e, Condition D (72 hours to trip bistables).
<p>Event termination: Instrument failure identified and selected out; Main Feed Reg Valve back in AUTO; SRO identified applicable Technical Specifications or at Lead Examiner Discretion.</p> <p>Simulator Operator: Insert Key 3 at direction of Lead Examiner.</p>		

Op-Test No.: _____	Scenario No.: <u>1</u>	Event No.: <u>3</u>	Page <u>8</u> of <u>26</u>						
Event Description: <u>Pressurizer pressure instrument, BB PI-456, fails low.</u>									
Time	Position	Applicant's Actions or Behavior							
Simulator Operator: Insert Key 3 at direction of Lead Examiner. Diagnostics: Meter BB PI-456 fails low, MCB alarm 83C, RX PARTIAL TRIP, illuminates. Bistables PZR LP PB456C, PZR LP PORV BLOC PS456E, PZR LP PB456D illuminate. Bistable PZR PRESS PB456B extinguishes.									
	SRO, ATC, BOP	Crew diagnoses instrument failure.							
	SRO, ATC	(SRO direction/Memory Action) RO compares indications, and PZR PRESS MASTER CTRL, BB PK-455A, placed in manual. EXAMINER NOTE: Channels P457/P456 are selected on PZR PRESS CTRL SEL, BB PS-455F.							
	SRO, ATC	Enter and Perform OFN SB-008, INSTRUMENT MALFUNCTIONS SRO directs OFN SB-008, INSTRUMENT MALFUNCTIONS							
	SRO, ATC	1. Check For Malfunction: * Check If Reactor Coolant System Instrument Channel Or Controller Is Malfunctioning: a. Perform appropriate attachment or malfunctioning channel or controller from table below.							
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 30%;">VARIABLE</th> <th style="width: 30%;">CHANNELS</th> <th style="width: 40%;">ATTACHMENT</th> </tr> <tr> <td>PZR Pressure (BB)</td> <td>P-455, P-456, P-457, P-458</td> <td>ATTACHMENT K</td> </tr> </table>	VARIABLE	CHANNELS	ATTACHMENT	PZR Pressure (BB)	P-455, P-456, P-457, P-458	ATTACHMENT K	
VARIABLE	CHANNELS	ATTACHMENT							
PZR Pressure (BB)	P-455, P-456, P-457, P-458	ATTACHMENT K							
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status.									
NOTE: Steps K1 through K4 are Memory Action Steps.									
	SRO, ATC	K1. Identify Failed Instrument Channel: a. Compare pressurizer pressure indications to confirm a pressurizer pressure channel failure: <ul style="list-style-type: none"> • BB PI-455A • BB PI-456 • BB PI-457 • BB PI-458 							

Op-Test No.: _____ Scenario No.: 1 Event No.: 3Page 9 of 26Event Description: Pressurizer pressure instrument, BB PI-456, fails low.

Time	Position	Applicant's Actions or Behavior
	SRO, ATC	K2. Check Failed Pressurizer Pressure Channel Selected On PZR PRESS CTRL SEL switch <ul style="list-style-type: none"> BB PS-455F EXAMINER NOTE: P457/P456 is selected for control. BB PI-456 failed low.
	SRO, ATC	K3. Place PZR PRESS MASTER CTRL In Manual And Control Pressure. <ul style="list-style-type: none"> BB PK-455A
	SRO, ATC	K4. Select Alternate Pressurizer Pressure Channel On PZR PRESS CTRL SEL Switch <ul style="list-style-type: none"> BB PS-455F EXAMINER NOTE: Select from channel P457/P456 to channel P455/P458
	SRO, ATC	K5. Take Following Actions, As Appropriate To Stop Pressure Control Transient: <ol style="list-style-type: none"> Check Pressurizer Spray Valves – RESPONDING CORRECTLY Check PZR Control Heaters - OPERABLE Ensure PZR PORV - CLOSED <ul style="list-style-type: none"> BB HIS-455A BB HIS-456A
	SRO, ATC	K6. Return Pressurizer Pressure Control To Automatic: <ul style="list-style-type: none"> Spray Valves Control Heaters Backup Heaters (using SYS BB-203) Open PORV Block Valves Pressurizer Pressure Control EXAMINER NOTE: BB PK-455A is returned to AUTO control
	SRO, ATC	K7. Monitor Pressurizer Pressure Response To Ensure Proper Control
	SRO, ATC, BOP	K8. Check Failed Pressure Channel Not Selected On PZR PRESS RECORD SEL. <ul style="list-style-type: none"> BB PS-455G K8. RNO. Select alternate pressurizer pressure channel for input to recorder.

NOTE: Pressurizer pressure channels PT-455 and PT-457 are input to subcooling margin monitor Train A. Pressurizer pressure channels PT-456 and PT-458 are inputs to subcooling margin monitor Train B. Selecting alternate pressure control channels does not alter inputs to the subcooling monitors. However, once the affected pressure transmitter fails above or below the calibrated limit it will automatically be removed from subcooling margin calculation.

Op-Test No.: _____ Scenario No.: 1 Event No.: 3Page 10 of 26Event Description: Pressurizer pressure instrument, BB PI-456, fails low.

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	K9. Check Failed Pressure Channel Not Selected On OP DT/OT DT LOOP RECORD SEL Switch. <ul style="list-style-type: none"> SC TS-411E K9 RNO. Select alternate pressurizer pressure channel for input to recorder.
	SRO	K10. Monitor The Following Technical Specification LCOs And Comply With Action Statements, As Appropriate: <ul style="list-style-type: none"> 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Table 3.3.1-1, Functions 6 and 8 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Table 3.3.2-1, Functions 1.d, 3.a.3, 5.d, 6.e And 8.b 3.3.4, REMOTE SHUTDOWN INSTRUMENTATION, Table 3.3.4-1, Function 3 3.3.6, CONTAINMENT PURGE ISOLATION INSTRUMENTATION 3.3.7, CONTROL ROOM EMERGENCY VENTILATION SYSTEM ACTUATION INSTRUMENTATION SRO identifies: <ul style="list-style-type: none"> TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 6 and 8, Conditions E and M are entered (both are 72 hours to trip bistables). TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately due to failure) and from Table 3.3.2-1, 1.d, 3.a.3, 5.d, 6.e and 8.b, Conditions D (1.d, 3.a.3, 5.d, 6.e: 72 hours to place channel in bypass) and L (one hour to verify P-11 interlock in correct state).
	SRO, ATC, BOP	Direct ATC/BOP to verify P-11 in the correct state. (correct state: NOT LIT)
Event termination: Instrument failure identified; Alternate channel selected; Pressurizer pressure control returned to AUTO; SRO identified applicable Technical Specifications or at Lead Examiner Discretion.		
Simulator Operator: Insert Key 4 at direction of Lead Examiner.		

Op-Test No.: _____	Scenario No.: <u>1</u>	Event No.: <u>4</u>	Page <u>11</u> of <u>26</u>
Event Description: <u>Main Feed Regulating Valve "D" fails closed; manual control available using controller AE FK-540.</u> _____ _____			
Time	Position	Applicant's Actions or Behavior	
Simulator Operator: Insert Key 4 at direction of Lead Examiner. Diagnostics: SG D MFW REG VLV CTRL, AE FK-540, decreasing. MCB alarms 111C, SG D FLOW MISMATCH and 111B, SG D LEV DEV illuminate.			
	SRO, BOP	Crew diagnoses component failure.	
	SRO, BOP	(SRO direction/Memory Action steps) SG D MFW REG VLV CTRL, AE FK-540, placed in Manual and UP arrow depressed to OPEN the Main Feed Reg Valve, matching steam and feed flows and restoring narrow range level to ~50% (or program value).	
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status.			
	SRO, BOP	Enter ALR 00-111B, rev 9, SG D LEV DEV SRO directs procedure.	
NOTE: Steps 1 through 3 are Memory Action steps.			
	SRO, ATC, BOP	1. Check Steam Generator D Controlling Level Channel: * 5% GREATER THAN PROGRAM LEVEL OR * 5% LESS THAN PROGRAM LEVEL	
	SRO, ATC, BOP	2. Check Instruments – OPERATING PROPERLY <ul style="list-style-type: none"> • Steam Generator D Controlling Level Channel – WITHIN 6% OF REMAINING S/G D NARROW RANGE LEVEL CHANNELS <ul style="list-style-type: none"> * AE LI-549 * AE LI-554 • Steam Generator D Controlling Steam Pressure Channel – WITHIN 100 PSIG OF REMAINING CHANNELS <ul style="list-style-type: none"> * AB PI-544A * AB PI-545A • Steam Generator D Controlling Feedwater Flow Channel – WITHIN 0.2 MPPH OF OTHER CHANNEL • Steam Generator D Controlling Steam Flow Channel – WITHIN 0.2 MPPH OF OTHER CHANNEL 	

[illegible]

Op-Test No.: _____	Scenario No.: <u>1</u>	Event No.: <u>5</u>	Page <u>13</u> of <u>26</u>
Event Description: <u>Major: Seismic event with an inadvertent Reactor trip and Safety Injection (SI) signal and a Loss of all Auxiliary Feedwater. CT – Manual Main Turbine trip before IR SUR becomes positive and before any RCS cold leg temperature decreases by more than 100°F in a 1-hour period and reaches the T1 limit (240°F) and prior to transition out of EMG E-0.</u>			
Time	Position	Applicant's Actions or Behavior	
Simulator Operator: Insert Key 5 at direction of Lead Examiner. Diagnostics: Audible noise, various Main Control Board alarms: Seismic: 00-098D, OBE; Safety Injection: Main Control Board alarms 00-030A, NF039A LOCA SEQ ACTUATED; 00-031A, NF039B LOCA SEQ ACTUATED. Reactor trip: At DRPI – all rod bottom lights on the bottom.			
	SRO, ATC, BOP	Enter EMG E-0, rev 31, REACTOR TRIP OR SAFETY INJECTION SRO directs EMG E-0. ATC and BOP perform Immediate Actions of EMG E-0.	
	BOP	At Immediate Action step 2 of EMG E-0: Recognized Main Turbine did not trip. CT – Manual Main Turbine trip. BOP depressed both MAIN TURBINE MASTER TRIP 'A' and 'B' pushbuttons: AC HS-002A and AC HS-002B.	
CAUTION: Accident conditions can cause higher than normal radiation levels. Health Physics monitoring may be required while performing local operator actions. NOTES: <ul style="list-style-type: none"> Steps 1 through 4 are immediate action steps. Foldout page shall be monitored through out this procedure. 			
FOLDOUT PAGE CRITERIA			
1. RCP TRIP CRITERIA 2. SI ACTUATION CRITERIA 3. FAULTED S/G ISOLATION CRITERIA 4. RUPTURED S/G ISOLATION CRITERIA 5. COLD LEG RECIRCULATION CRITERIA 6. AFW SUPPLY SWITCHOVER CRITERIA 7 RCS TEMPERATURE CONTROL <ul style="list-style-type: none"> If a Loss-Of-Offsite Power has occurred, THEN close MSIVs. <ul style="list-style-type: none"> AB HS-79 AB HS-80 IF no RCPs are running AND off-site power is available, THEN select STM PRESS mode on the steam dumps. <ul style="list-style-type: none"> AB US-500Z IF RCS C/L temperature is less than 557°F AND decreasing , THEN control total feed flow to limit cooldown. <ul style="list-style-type: none"> Maintain total feed flow greater than 270, 000 lbm/hr until narrow range is greater than 6% [29%] in at least one S/G. 			
	SRO, BOP	Per Foldout Criteria #7, BOP throttles AFW to S/Gs to greater than 270, 000 lbm/hr until narrow range is greater than 6% [29%] in at least one S/G.	

Op-Test No.: _____	Scenario No.: <u>1</u>	Event No.: <u>6</u>	Page <u>14</u> of <u>26</u>
Event Description: <u>Main turbine fails to trip (auto), manual trip available.</u> CT – Manual Main Turbine trip before IR SUR becomes positive and before any RCS cold leg temperature decreases by more than 100°F in a 1-hour period and reaches the T1 limit (240°F) and prior to transition out of EMG E-0.			
Time	Position	Applicant's Actions or Behavior	
	SRO, ATC	1. Verify Reactor Trip: a. Check all rod bottom lights - LIT b. Check reactor trip breakers and bypass breakers - OPEN c. Check intermediate range neutron flux - DECREASING	
EXAMINER NOTE: During performance of Immediate Actions, BOP diagnosed the Main Turbine did not trip and depressed both MAIN TURBINE MASTER TRIP 'A' and 'B' pushbuttons: AC HS-002A and AC HS-002B.			
Diagnostics: <u>Main Stop Valves are not closed.</u>			
	SRO, BOP	2. Verify Turbine Trip: a. Check Main Stop Valves – ALL CLOSED; No, Perform RNO 2RNO a. Perform the following: 1. Manually trip turbine CT – Manual Main Turbine trip BOP depressed both MAIN TURBINE MASTER TRIP 'A' and 'B' pushbuttons, AC HS-002A and AC HS-002B, in order to trip the Main Turbine. EXAMINER NOTE: MCB alarms 113A, UNIT TRIP TURB TRIP and 114A, TURB TRIP, illuminate. Turbine is tripped and Main Stop valves are closed.	
	SRO, ATC	3. Check AC Emergency Busses – AT LEAST ONE ENERGIZED * NB01 – ENERGIZED * NB02 - ENERGIZED	
	SRO, ATC	4. Check If Safety Injection Is Actuated: a. Check any indication SI is actuated - LIT * Annunciator 00-030A, NF039A LOCA SEQ ACTUATED – LIT * Annunciator 00-031A, NF039B LOCA SEQ ACTUATED – LIT * ESFAS status panel SI section – ANY WHITE LIGHTS LIT * Partial rip Status Permissive/Block status panel – SI RED LIGHT LIT	
	SRO, ATC	b. Check both trains of SI actuated • Ann 00-030A, NF039A LOCA SEQ ACTUATED – LIT • Ann 00-031A, NF039B LOCA SEQ ACTUATED – LIT	
EXAMINER NOTE: In the scenario, a MSLIS may occur based on the 100 psig in 50 second rate – and the MSIVs will be closed.			

Op-Test No.: _____ Scenario No.: 1 Event No.: 5Page 15 of 26Event Description: Major event continued.

Time	Position	Applicant's Actions or Behavior
CAUTION: If offsite power is lost after SI reset, manual action may be required to restore safeguards equipment to the required configuration.		
	SRO, ATC, BOP	5. Check if SI is required: <ul style="list-style-type: none"> * SI was manually actuated AND was required * Containment pressure is currently or has been – GREATER THAN OR EQUAL TO 3.5 PSIG * RCS pressure is currently or has been – LESS THAN OR EQUAL TO 1830 PSIG * Any S/G pressure is currently or has been – LESS THAN OR EQUAL TO 615 PSIG No, SI is not required, Perform RNO
	SRO, ATC, BOP	RNO 5. Perform the following: <ol style="list-style-type: none"> a. Reset SI <ul style="list-style-type: none"> • SB HS-42A • SB HS-43A b. IF ONE OR BOTH trains of SI failed to reset, THEN perform OFN SB-044, FAILURE OF SI TO RESET while continuing with this procedure. c. Close BIT inlet valves <ul style="list-style-type: none"> • EM HIS-8803A • EM HIS-8803B d. Close BIT outlet valves <ul style="list-style-type: none"> • EM HIS-8801A • EM HIS-8801B e. Stop all but one CCP and place in standby. <ul style="list-style-type: none"> * BG HIS-1A * BG HIS-2A f. IF any CCP is running, THEN stop NCP. <ul style="list-style-type: none"> • BG HIS-3 g. IF condenser steam dumps are available, THEN ensure steam dumps control RCS Tave at 557°F h. IF condenser steam dumps are NOT available, THEN adjust at least one S/G ARV to 557°F (1090 psig setpoint)
EXAMINER NOTE: SRO may divide the ATC and BOP actions. ATC actions: Reset SI, Close BIT inlet and outlet valves; secure one running CCP (probably 'A') and the NCP. BOP actions: IF steam dumps available, BOP adjusts STEAM HDR PRESS CTRL, AB PK-507, to control RCS Tave at 557°F. IF steam dumps NOT available, BOP adjusts ARV at least one controller (AB PIC-1A, AB PIC-2A, AB PIC, 3A, AB PIC-4A) to control RCS Tave at 557°F.		

Op-Test No.: _____	Scenario No.: <u>1</u>	Event No.: <u>5</u>	Page <u>16</u> of <u>26</u>
Event Description: <u>Major event continued. Loss of all Auxiliary Feedwater</u>			
Time	Position	Applicant's Actions or Behavior	
	SRO, BOP	6. Check Main Generator Breakers And Exciter Breaker – OPEN <ul style="list-style-type: none"> • MA ZL-3A • MA ZL-4A • MA ZL-2 	
	SRO, ATC, BOP	7. Verify Automatic Actions Using Attachment F, AUTOMATIC SIGNAL VERIFICATION	
Simulator Operator: At step 7 of EMG E-0, insert Key 6. – Loss of all Auxiliary Feedwater. Diagnostics: MD AFP 'B' and TDAFW trip. Main Control Board alarm annunciate: 00-130A, MDAFP B TROUBLE			
	SRO, ATC, BOP	8. Check Total AFW Flow – GREATER THAN 270, 000 LBM/HR; No, Perform RNO	
	SRO, ATC, BOP	8. RNO Perform the following: a. IF S/G narrow range level in at least one S/G is greater than 6% [29%], THEN control feed flow to maintain narrow range level and go to step 9. b. Manually start pumps and align valves as necessary to establish greater than 270, 000 lbm/hr AFW flow. c. IF total AFW flow greater than 270, 000 lbm/hr can NOT be established, THEN perform the following:	
	SRO, ATC, BOP	1) Direct operator to monitor Critical Safety Functions using EMG F-0, CRITICAL SAFETY FUNCTION STATUS TREES (CSFST) 2) Ensure BIT Inlet AND Outlet Valves are open <ul style="list-style-type: none"> • EM HIS-8803A • EM HIS-8803B • EM HIS-8801A • EM HIS-8801B 3) Continue with Attachment F and Go to EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Step 1.	
EXAMINER NOTE: The BIT inlet and outlet valves were closed at step 5RNO and are reopened at step 8 RNO.			

Op-Test No.: _____ Scenario No.: 1 Event No.: 5Page 17 of 26Event Description: EMG E-0, REACTOR TRIP OR SAFETY INJECTION
ATTACHMENT F, AUTOMATIC SIGNAL VERIFICATION

Time	Position	Applicant's Actions or Behavior
	ATC, BOP	F1. Check AC Emergency Busses – ENERGIZED <ul style="list-style-type: none"> • NB01 – ENERGIZED • NB02 – ENERGIZED
	ATC, BOP	F2. Verify Feedwater Isolation <ul style="list-style-type: none"> a. Main feedwater pumps - TRIPPED <ul style="list-style-type: none"> • Annunciator 00-120A, MFP A TRIP – LIT • Annunciator 00-123A, MFP B TRIP – LIT b. Main feedwater reg valves - CLOSED <ul style="list-style-type: none"> • AE ZL-510 for S/G A • AE ZL-520 for S/G B • AE ZL-530 for S/G C • AE ZL-540 for S/G D c. Main feedwater reg bypass valves - CLOSED <ul style="list-style-type: none"> • AE ZL-550 for S/G A • AE ZL-560 for S/G B • AE ZL-570 for S/G C • AE ZL-580 for S/G D d. Main feedwater isolation valves – CLOSED <ul style="list-style-type: none"> • AE HIS-39 for S/G A • AE HIS-40 for S/G B • AE HIS-41 for S/G C • AE HIS-42 for S/G D e. Main feedwater chemical injection valves – CLOSED <ul style="list-style-type: none"> • AE HIS-43 for S/G A • AE HIS-44 for S/G B • AE HIS-45 for S/G C • AE HIS-46 for S/G D f. Check ESFAS status panel SGBSIS section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> • Red train • Yellow train
	ATC, BOP	F3. Verify Containment Isolation Phase A: <ul style="list-style-type: none"> a. Check ESFAS status panel CISA section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> • Red train • Yellow train

Op-Test No.: _____ Scenario No.: 1 Event No.: 5Page 18 of 26Event Description: ATTACHMENT F, AUTOMATIC SIGNAL VERIFICATION continued

Time	Position	Applicant's Actions or Behavior
	ATC, BOP	<p>F4. Verify AFW Pumps Running:</p> <p>a. Check motor driven AFW pumps – BOTH RUNNING; No perform RNO</p> <p>F4 RNO a. Manually start pumps</p> <ul style="list-style-type: none"> • AL HIS-22A • AL HIS-23A (tagged out) <p>EXAMINER NOTE: MD AFW 'B' and TDAFW pumps are tripped when Key 6 is inserted. SRO may give permission to attempt one start. No AFW pumps will start.</p>
<p>Simulator Operator: If dispatched as Building watch(es) to determine status of AFW pumps, report the following:</p> <p>MDAFW pump 'A' is tagged out and MD AFW 'B' breaker will not reset.</p> <p>TDAFW pump linkage broke on the overspeed trip device.</p> <p>If WWM contacted, acknowledge request and report a team will be formed.</p>		
	ATC, BOP	<p>F4 b. Check turbine driven AFW pump – RUNNING; No, Perform RNO</p> <p>F4 RNO b. Perform the following:</p> <ol style="list-style-type: none"> 1) Check if turbine driven AFW should be running: <ul style="list-style-type: none"> * At least 2/4 S/G narrow range level channels on 2/4 S/Gs – LESS THAN 23.5% OR * Loss on NB01 voltage has occurred OR * Loss of NB02 voltage has occurred OR * AMSAC actuation 2) IF turbine driven AFW pump should be running, THEN manually open steam supply valves <ol style="list-style-type: none"> a. AB HIS-5A b. AB HIS-6A c. FC HIS-312A
	ATC, BOP	<p>F5. Verify ECCS Pumps Running:</p> <p>a. Check CCPs – BOTH RUNNING</p> <p>b. Check SI pumps – BOTH RUNNING</p> <p>c. Check RHR pumps – BOTH RUNNING</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 7

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Event Description: ATTACHMENT F, AUTOMATIC SIGNAL VERIFICATION continued

Containment Coolers 'A' and 'C' not running in SLOW speed. See Step F8 RNO.

Time	Position	Applicant's Actions or Behavior
	ATC, BOP	<p>F6. Verify CCW Alignment</p> <p>a. Check CCW pumps – ONE RUNNING IN EACH TRAIN</p> <p>b. Check one pair of CCW service loop Supply And Return Valves for an operating CCW pump - OPEN</p> <p style="padding-left: 40px;">* EG ZL-15 AND EG ZL-53</p> <p style="text-align: right;">OR</p> <p style="padding-left: 40px;">* EG ZL-16 AND EG ZL-54</p>
	ATC, BOP	F7. Check ESW Pumps – BOTH RUNNING
	ATC, BOP	<p>F8. Check Containment Fan Coolers – RUNNING IN SLOW SPEED; No, Perform RNO</p> <p>F8 RNO. Perform the following for each Containment Cooler Fan that is still running in Fast or is not running:</p> <p>a. Place Containment Cooler Fan Speed Selector switches in Slow</p> <p style="padding-left: 40px;">* GN HS-5 for cooler 1A</p> <p style="padding-left: 40px;">* GN HS-9 for cooler 1B</p> <p style="padding-left: 40px;">* GN HS-13 for cooler 1C</p> <p style="padding-left: 40px;">* GN HS-17 for cooler 1D</p> <p>b. Manually start containment cooler fans.</p> <p style="padding-left: 40px;">* GN HIS-5 for cooler 1A</p> <p style="padding-left: 40px;">* GN HIS-9 for cooler 1B</p> <p style="padding-left: 40px;">* GN HIS-13 for cooler 1C</p> <p style="padding-left: 40px;">* GN HIS-17 for cooler 1D</p> <p>EXAMINER NOTE: ATC/BOP should perform RNO for Containment Fan Coolers 'A' and 'C'.</p>
	ATC, BOP	<p>F9. Verify Containment Purge Isolation:</p> <p>a. Check ESFAS status panel CPIS section – ALL WHITE LIGHTS LIT</p> <ul style="list-style-type: none"> • Red train • Yellow train

Op-Test No.: _____ Scenario No.: 1 Event No.: 5Page 20 of 26Event Description: ATTACHMENT F, AUTOMATIC SIGNAL VERIFICATION continued

Time	Position	Applicant's Actions or Behavior
	ATC, BOP	F10. Verify Both Trains Of Control Room Ventilation Isolation: a. Check ESFAS status panel CRIS section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> • Red train • Yellow train b. Ensure Control Room outer door - CLOSED
	ATC, BOP	F11. Verify Main Steamline Isolation Not Required: a. Check containment pressure – HAS REMAINED LESS THAN 17 PSIG <ul style="list-style-type: none"> • GN PR-934 b. Check either condition below - SATISFIED <ul style="list-style-type: none"> * Low steamline pressure SI – NOT BLOCKED AND steam line pressure – HAS REMAINED GREATER THAN 615 PSIG OR * Low steamline pressure SI – BLOCKED AND steamline pressure rate – HAS REMAINED LESS THAN 100 PSI/50 SEC
	ATC, BOP	<u>F12.</u> Verify Containment Spray Not Required: a. Containment pressure – HAS REMAINED LESS THAN 27 PSIG: <ul style="list-style-type: none"> • Annunciator 00-059A, CSAS - NOT LIT • Annunciator 00-059B, CISB – NOT LIT • GN PR-934
	ATC, BOP	F13. Verify ECCS Flow: a. Check Centrifugal Charging Pumps TO Boron Injection Tank Flow meters – FLOW INDICATED <ul style="list-style-type: none"> • EM FI-917A • EM FI-917B b. Check RCS pressure – LESS THAN 1700 PSIG; No, Perform RNO F13 RNO b. Go to Step F14.
	ATC, BOP	F14. Verify AFW Valves – PROPERLY ALIGNED: a. Check ESFAS status panel AFAS section – ALL WHITE LIGHTS LIT b. Check white train ESFAS status panel AFAS section – ALL WHITE LIGHTS LIT

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Op-Test No.: _____	Scenario No.: <u>1</u>	Event No.: <u>5</u>	Page <u>22</u> of <u>26</u>
Event Description: <u>EMG FR-H1, rev 29A, RESPONSE TO LOSS OF SECONDARY HEAT SINK</u>			
Time	Position	Applicant's Actions or Behavior	
EXAMINER NOTE: No Transition Brief should occur.			
CATUIONS <ul style="list-style-type: none"> If total feed flow is less than 270, 000 lbm/hr due to operator action, this procedure shall not be performed. If a non-faulted S/G is available, fed flow shall not be re-established to any faulted S/G. NOTE: Foldout page shall be monitored throughout this procedure.			
	SRO, ATC, BOP	Enter EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK. SRO directs EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.	
	SRO, ATC, BOP	1. Check If Secondary Heat Sink Is Required: a. RCS Pressure – GREATER THAN ANY NON-FAULTED S/G PRESSURE b. RCS Hot Leg Temperature – GREATER THAN 350°F	
	SRO, BOP	2. Check If RCS Bleed And Feed – NOT REQUIRED a. Check Wide Range Level In At Least Two S/G's – GREATER THAN OR EQUAL TO 12% [28%] * AE LI-501, SG A WR LEV * AE LI-502, SG B WR LEV * AE LI-503, SG C WR LEV * AE LI-504, SG D WR LEV	
	SRO, ATC, BOP	3. Try To Establish AFW Flow To At Least One S/G a. Check ESFAS Status Panel SGBSIS Section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> Red Train Yellow Train b. Check Control Room indications for cause of AFW failure: <ul style="list-style-type: none"> CST Level Motor Driven AFW Pump Power Supply Turbine Driven AFW Pump Steam Supply AFW Valve Alignment c. Try to restore AFW flow.	

Op-Test No.: _____	Scenario No.: <u>1</u>	Event No.: <u>5</u>	Page <u>23</u> of <u>26</u>
Event Description: <u>EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK</u>			
Time	Position	Applicant's Actions or Behavior	
Simulator Operator: If contacted as Building watch: MDAFW pump 'A' is tagged out and MD AFW 'B' breaker will not reset. TDAFW pump linkage broke on the overspeed trip device. If contacted as WWM: Acknowledge request; a team will be formed.			
	SRO, BOP	4. Check Total Flow To S/Gs – GREATER THAN 270, 000 LBM/HR; No, Perform RNO 4 RNO Perform the following: a. IF feed flow to at least one S/G can be verified, THEN perform the following: NO – move to b. b. IF feed flow can NOT be verified to at least one S/G, THEN perform the following 1) Dispatch operator to locally restore AFW flow. 2) IF all AFW flow has been lost, THEN close AFW throttle valves to prevent inadvertent feedwater addition to a hot/dry S/G. • AL HK-8A And AL HK-7A For SG A • AL HK-10A And AL HK-9A For SG B • AL HK-12A And AL HK-11A For SG C • AL HK-6A And AL HK-5A For SG D 3) Go to step 6.	
Simulator Operator: Building watch has already reported AFW pump status.			
	SRO, ATC, BOP	6. Reduce Heat Input To RCS: a. Stop all RCPs • BB HIS-37 For RCP A • BB HIS-38 For RCP B • BB HIS-39 For RCP C • BB HIS-40 For RCP D b. Turn off all PZR heaters • BB HIS-50 • BB HIS-51A • BB HIS-52A	

Op-Test No.: _____ Scenario No.: 1 Event No.: 5Page 24 of 26Event Description: EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK

CT – Establish feedwater flow in to at least one SG before RCS bleed and feed is initiated and before SGs dry out (RCS bleed and feed is initiated when 3 of 4 SGs indicate 12% wide range level. SG dryout is indicated by at least 3 SGs with wide range level less than 9%).

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	7. Establish S/G Pressure Control: a. Check Condenser – AVAILABLE; If No, Perform RNO <ul style="list-style-type: none"> • C-9 LIT • MSIV – OPEN • Circulating Water Pumps – RUNNING 7.a. RNO a. Perform the following: <ol style="list-style-type: none"> 1) Use the S/G ARVs. 2) Go to step 8. 7. b. Place Steam Header Pressure Control in manual. <ul style="list-style-type: none"> • AB PK-507 7. c. Manually set Steam Header Pressure Control output to zero <ul style="list-style-type: none"> • AB PK-507 7. d. Place Steam Dump Select Switch in STEAM PRESS position. <ul style="list-style-type: none"> • AB US-500Z 7. e. Place Steam Header Pressure Control in automatic. <ul style="list-style-type: none"> • AB PK-507
	SRO, BOP, ATC	8. Establish Flow From Non-Safety Related AFW Pump: a. Start non-safety AFW Pump per SYS AP-122, NON-SAFETY AUX FEED PUMP OPERATION
EXAMINER NOTE: SYS AP-122 procedure steps – on the next page.		
	SRO, BOP	b. Open TD AFWP Flow Control Valves to establish total AFW flow to S/Gs greater than 270, 000 lbm/hr. <ul style="list-style-type: none"> • AL HK-8A for SG A • AL HK-10A For S/G B • AL HK-12A For S/G C • AL HK-6A For S/G D CT – Establish feedwater flow in to at least one SG before RCS bleed and feed is initiated and before SGs dry out. See EXAMINER NOTE.
	SRO, ATC, BOP	c. Go to step 17.
EXAMINER NOTE: When actions of SYS AP-122, NON-SAFETY AUX FEED PUMP OPERATION, are complete, turbine driven flow control valves are opened to establish AFW flow to S/Gs greater than 270, 000 lbm/hr. Opening the valves to establish AFW flow to the Steam Generators completes the critical task. AFW flow can be monitored using NPIS, or meters AL FI-2A, AFW TO SG A FLOW, AL FI-3A, AFW TO SG B FLOW, AL FI-4A, AFW TO SG C FLOW and AL FI-1A, AFW TO SG D FLOW.		

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Op-Test No.: _____ Scenario No.: 1 Event No.: 5Page 26 of 26Event Description: EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	<u>17.</u> Check S/G Levels: a. Check RCS Bleed And Feed – NOT ESTABLISHED b. Check Narrow Range Level In At Least One S/G – GREATER THAN 6% [29]; No, Perform RNO
	SRO, ATC, BOP	<u>17.</u> b. RNO b. Perform the following: 1) Verify flow to S/Gs: a. Core Exit Temperatures – STABLE OR DECREASING b. Level In At Least One S/G – INCREASING * Wide Range OR * Narrow Range 2) IF feedwater flow to at least one S/G can NOT be verified, THEN go to step 18. 3) IF feedwater flow to as least one S/G verified, THEN maintain flow to restore narrow range level to greater than 6% [29%] while returning to procedure and step in effect.
EXAMINER NOTE: NPIS computer can be used to monitor core exit temperatures.		
EXAMINER NOTE: Scenario termination criteria: AFW has been established to the Steam Generators per EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, completion of all critical tasks or at Lead Examiner discretion.		
Simulator Operator: At direction of Lead Examiner, FREEZE simulator. Do not reset until directed from Lead Examiner. Collect any data needed.		

Op-Test No.: _____	Scenario No.: <u>3</u>	Event No.: <u>1</u>	Page <u>1</u> of <u>35</u>						
Event Description: <u>Pressurizer (PZR) pressure channel, BB PI-457, fails high.</u>									
Time	Position	Applicant's Actions or Behavior							
Simulator Operator: Insert Key 1 at Lead Examiner direction.									
Diagnostics: Meter for Pressurizer (PZR) pressure BB PI-457 increasing; PZR Spray valves opening, RCS/PZR pressure decreasing (entry into DNB Technical Specification (TS) 3.4.1 Condition A); Main Control Board (MCB) alarms 00-033B. PZR HI PRESS DEV, 00-035B, PORV OPEN, 00-083C, RX PARTIAL TRIP annunciates; Bistable PZR HP PB 457A illuminates									
	SRO, ATC	Crew diagnoses instrument failure. ATC performs Memory Action steps of OFN SB-008, INSTRUMENT MALFUNCTIONS, ATTACHMENT K, PZR PRESSURE MALFUNCTION.							
	ATC	(SRO direction/Memory Action) PZR pressure Instrument BB PI-457 failed high. Determined it is selected for control on PZR PRESS CTRL SEL BB PS-455F; Placed PZR PRESS MASTER CTRL, BB PK-455A in Manual and depressed the UP arrow pushbutton to restore pressure (Spray valves will close).							
	SRO, ATC, BOP	Enter and Perform OFN SB-008, rev 35, INSTRUMENT MALFUNCTIONS SRO directs OFN SB-008, INSTRUMENT MALFUNCTIONS							
	SRO, ATC	1. Check for malfunction: <ul style="list-style-type: none"> * Check If Reactor Coolant System Instrument Channel Or Controller Is Malfunctioning: <ul style="list-style-type: none"> a. Perform appropriate attachment for malfunctioning channel or controller from table below: <table border="1" style="width: 100%; margin-top: 10px; border-collapse: collapse;"> <tr> <th style="width: 33%;">Variable</th> <th style="width: 33%;">Channels</th> <th style="width: 33%;">Attachment</th> </tr> <tr> <td>PZR Pressure (BB)</td> <td>P-455, P-456, P-457, P-458</td> <td>Attachment K</td> </tr> </table>		Variable	Channels	Attachment	PZR Pressure (BB)	P-455, P-456, P-457, P-458	Attachment K
Variable	Channels	Attachment							
PZR Pressure (BB)	P-455, P-456, P-457, P-458	Attachment K							
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status.									
NOTE: Steps K1 and K3 are Memory Action steps.									
	SRO, ATC	K1. Identify Failed Instrument Channel: <ul style="list-style-type: none"> a. Compare pressurizer pressure indications to confirm a pressure channel failure: <ul style="list-style-type: none"> • BB PI-455A • BB PI-456 • BB PI-457 • BB PI-458 							

Op-Test No.: _____ Scenario No.: 3 Event No.: 1Page 2 of 35Event Description: Pressurizer (PZR) pressure channel, BB PI-457, fails high.

Time	Position	Applicant's Actions or Behavior
	SRO, ATC	K2. Check Failed Pressurizer Pressure Channel Selected On PZR PRESS CTRL SEL Switch <ul style="list-style-type: none"> BB PS-455F
	SRO, ATC	K3. Place PZR PRESS MASTER CTRL In Manual And Control Pressure. <ul style="list-style-type: none"> BB PK-455A
	SRO, ATC	K4. Select Alternate Pressurizer Pressure Channel On PZR PRESS CTRL SEL Switch <ul style="list-style-type: none"> BB PS-455F EXAMINER NOTE: ATC selects either P455/P456 or P455/P458 for control.
	SRO, ATC	K5. Take Following Actions: As Appropriate To Stop Pressure Control Transient: <ol style="list-style-type: none"> Check Pressurizer Spray Valves – RESPONDING CORRECTLY Check PZR Control Heaters - OPERABLE Ensure PZR PORV - CLOSED <ul style="list-style-type: none"> BB HIS-455A BB HIS-456A
	SRO, ATC	K6. Return Pressurizer Pressure Control To Automatic: <ul style="list-style-type: none"> Spray Valves Control Heaters Backup Heaters (using SYS BB-203) Open PORV Block Valves Pressurizer Pressure Control AT SRO direction, ATC restores BB PK-455A to AUTO.
EXAMINER NOTE: As pressure recovers, and Block valves open, alarm 34C clears. As PZR pressure recovers and returns to normal operating band, Crew announces exit of DNB (TS 3.4.1.)		
	SRO, ATC	K7. Monitor Pressurizer Pressure Response To Ensure Proper Control
	SRO, ATC	K8. Check Failed Pressure Channel Not Selected on PZR PRESS RECORD SEL. <ul style="list-style-type: none"> BB PS-455G; If No, Perform RNO K8. RNO Select alternate pressurizer pressure channel for input to recorder.

Op-Test No.: _____ Scenario No.: 3 Event No.: 1Page 3 of 35Event Description: Pressurizer (PZR) pressure channel, BB PI-457, fails high.

Time	Position	Applicant's Actions or Behavior
<p>NOTE: Pressurizer pressure channels PT-455 and PT-457 are input to subcooling margin monitor Train A. Pressurizer pressure channels PT-456 and PT-458 are inputs to subcooling margin monitor Train B. Selecting alternate pressure control channel does not alter inputs to the subcooling monitors. However, once the affected pressure transmitter fails above or below the calibrated limit it will automatically be removed from the subcooling margin calculation.</p>		
	SRO, ATC, BOP	<p>K9. Check Failed Pressure Channel Not Selected On OP DT/OT DT LOOP RECORD SEL Switch</p> <ul style="list-style-type: none"> SC TS-411E; If No, Perform RNO <p>K9. RNO Select alternate pressurizer pressure channel for input to recorder.</p>
	SRO	<p>K10. Monitor The Following Technical Specification LCOs An Comply With Action Statements, As Appropriate:</p> <ul style="list-style-type: none"> 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Table 3.3.1-1, Functions 6 And 8 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION, Table 3.3.2-1, Functions 1.d, 3.a.3, 5.d, 6.e, And 8.b 3.3.4, REMOTE SHUTDOWN INSTRUMENTATION, Table 3.3.4-1, Function 3 3.3.6, CONTAINMENT PURGE ISOLATION INSTRUMENTATION 3.3.7, CONTROL ROOM EMERGENCY VENTILATION SYSTEM ACTUATION INSTRUMENTATION <p>SRO identifies:</p> <ul style="list-style-type: none"> 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 6 and 8, Condition E (72 hours to trip bistables) are identified. 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.2-1, Fu 1.d, 3.a.3, 5.d, 6.e, and 8.b, Condition D (72 hours to trip bistables) and Condition L (one hour to verify interlock P-11 in correct state) are identified.

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Op-Test No.: _____	Scenario No.: <u> 3 </u>	Event No.: <u> 2 </u>	Page <u> 5 </u> of <u> 35 </u>
Event Description: <u>Steam Generator 'D' level channel, AE LI-549 (controlling channel), fails low.</u>			
Time	Position	Applicant's Actions or Behavior	
Simulator Operator: Insert Key 2 at direction of Lead Examiner.			
Diagnostics: Meter SG D LEV AE LI-549 decreasing; MCB alarms 00-111B, SG D LEV DEV and 00-111A, SG D LEV HILO annunciate. Steam Generator D Main Feed Reg Bypass Valve AE LK-530 opening.			
	SRO, ATC, BOP	Crew diagnoses instrument failure. BOP performs Memory Actions of either ALR 00-111B, SG D LEV DEV; 00-111A, SG D LEV HILO; or OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment F, S/G LEVEL CHANNEL MALFUNCTION.	
	BOP	(SRO direction/Memory Action) Places SG D MFW REG BYPASS VLV, AE LK-580, in Manual and depresses the DOWN ARROW pushbutton to match steam and feed flow, restoring Steam Generator level.	
		EXAMINER NOTE: SG D STEAM/FW FLOW/LEV, AE FR-540, may be used.	
EXAMINER NOTE: ALRs 111B and 111A Operator Actions are very similar. ALR 111A is presented first as it is the higher tier alarm.			
	SRO, BOP	Enter and perform ALR 00-111A, rev 7A, SG D LEV HILO. SRO directs ALR 00-111A, SG D LEV HILO	
NOTE: Steps 1 through 3 are Memory Action steps.			
	SRO BOP	1. Check Steam Generator D Controlling Level Channel: <div style="display: flex; justify-content: space-between;"> <div> <ul style="list-style-type: none"> * Less Than 30% * Greater Than 70% </div> <div>OR</div> </div>	
	SRO, ATC, BOP	2. Check Instruments – OPERATING PROPERLY a. Steam Generator D Controlling Level Channel – WITHIN 7% OF REMAINING S/G D LEVEL CHANNELS; No, Perform RNO <ul style="list-style-type: none"> * AE LI-549 * AE LI-554 	
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status.			

Op-Test No.: _____ Scenario No.: 3 Event No.: 2

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Event Description: Steam Generator 'D' level channel, AE LI-549 (controlling channel), fails low.

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	<p>2. RNO Perform the following:</p> <ol style="list-style-type: none"> Place Feedwater Reg Valve or Feedwater Reg Bypass Control Valve in manual. <ul style="list-style-type: none"> AE FK-540 AE LK-580 Adjust Feedwater Reg Valve or Feedwater Reg Bypass Control Valve, as necessary, to establish steam generator level at program value. <ul style="list-style-type: none"> AE FK-540 AE LK-580 Go to OFN SB-008, INSTRUMENT MALFUNCTIONS, step 1. <p>EXAMINER NOTE: BOP placed AE LK-580 in Manual and depresses the DOWN ARROW pushbutton to match steam and feed flow, restoring Steam Generator level.</p>
EXAMINER NOTE: ALR 00-111B, rev 9, SG D LEV DEV, is presented.		
	SRO, BOP	Enter and perform ALR 00-111B, SG D LEV DEV. SRO directs ALR 00-111B, SG D LEV DEV.
NOTE: Steps 1 through 3 are Memory Action steps.		
	SRO, BOP	<p>1. Check Steam Generator D Controlling Level Channel:</p> <ul style="list-style-type: none"> 5% GREATER THAN PROGRAM LEVEL OR 5% LESS THAN PORGRAM LEVEL
	SRO, ATC, BOP	<p>2. Check Instruments - OPERATING PROPERLY</p> <ul style="list-style-type: none"> Steam Generator D Controlling Level Channel – WITHIN 6% OF REMAINING S/G D NARROW RANGE LEVEL CHANNELS; No, Perform RNO <ul style="list-style-type: none"> AE LI-549 AE LI-554 Steam Generator D Controlling Steam Pressure Channel – WITHIN 100 PSIG OF REMAINING S/G D NARROW RANGE LEVEL CHANNELS <ul style="list-style-type: none"> AB PI-544A AB PI-545A Steam Generator D Controlling Feedwater Flow Channel – WITHIN 0.2 MPPH OF OTHER CHANNEL Steam Generator D Controlling Steam Flow Channel - WITHIN 0.2 MPPH OF OTHER CHANNEL

Op-Test No.: _____ Scenario No.: 3 Event No.: 2Page 7 of 35Event Description: Steam Generator 'D' level channel, AE LI-549 (controlling channel), fails low.

Time	Position	Applicant's Actions or Behavior								
	SRO, BOP	<p>2. RNO Perform the following:</p> <p>a. Place Feedwater Reg Valve or Feedwater Reg Bypass Control Valve in manual.</p> <ul style="list-style-type: none"> * AE FK-540 * AE LK-580 <p>b. Adjust Feedwater Reg Valve or Feedwater Reg Bypass Control Valve, as necessary, to establish Steam Generator level at program value.</p> <ul style="list-style-type: none"> * AE FK-540 * AE LK-580 <p>c. Go to OFN SB-008, INSTRUMENT MALFUNCTIONS, step 1.</p> <p>EXAMINER NOTE: BOP placed AE LK-580 in Manual and depresses the DOWN ARROW pushbutton to match steam and feed flow, restoring Steam Generator level.</p>								
		EXAMINER NOTE: OFN SB-008, INSTRUMENT MALFUNCTIONS, may be entered directly.								
	SRO, BOP, ATC	Enter and Perform OFN SB-008, INSTRUMENT MALFUNCTIONS SRO directs OFN SB-008, INSTRUMENT MALFUNCTIONS								
	SRO, BOP	<p>1. Check For Malfunction:</p> <ul style="list-style-type: none"> * Check If Secondary System Instrument Channel Is Malfunctioning: <ul style="list-style-type: none"> a. Perform appropriate attachment for malfunctioning channel from table below <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>VARIABLE</th><th>CHANNEL</th><th>ATTACHMENT</th></tr> </thead> <tbody> <tr> <td rowspan="3">S/G LEVEL (AE)</td><td>CONTROL CHANNELS L-519, L-529, L-539, L-549, L-551, L-552, L-553, L-554</td><td rowspan="3">ATTACHMENT F</td></tr> <tr> <td>PROTECTION CHANNELS L-517, L-518, L-527, L-528, L-537, L-538, L-547, L-548</td></tr> <tr> <td>WIDE RANGE CHANNELS L-501, L-502, L-503, L-504</td></tr> </tbody> </table>	VARIABLE	CHANNEL	ATTACHMENT	S/G LEVEL (AE)	CONTROL CHANNELS L-519, L-529, L-539, L-549, L-551, L-552, L-553, L-554	ATTACHMENT F	PROTECTION CHANNELS L-517, L-518, L-527, L-528, L-537, L-538, L-547, L-548	WIDE RANGE CHANNELS L-501, L-502, L-503, L-504
VARIABLE	CHANNEL	ATTACHMENT								
S/G LEVEL (AE)	CONTROL CHANNELS L-519, L-529, L-539, L-549, L-551, L-552, L-553, L-554	ATTACHMENT F								
	PROTECTION CHANNELS L-517, L-518, L-527, L-528, L-537, L-538, L-547, L-548									
	WIDE RANGE CHANNELS L-501, L-502, L-503, L-504									

Op-Test No.: _____ Scenario No.: 3 Event No.: 2Page 8 of 35Event Description: Steam Generator 'D' level channel, AE LI-549 (controlling channel), fails low.

Time	Position	Applicant's Actions or Behavior															
NOTE: Steps F1 through F3 are Memory Action steps.																	
	SRO, BOP, ATC	<p>F1. Identify Failed Narrow Range S/G Level Instrument Channel:</p> <p>a. Compare narrow range S/G level indications to confirm a narrow range S/G level channel failure:</p> <table border="1"> <thead> <tr> <th>S/G</th> <th>INDICATION</th> <th>FUNCTION</th> </tr> </thead> <tbody> <tr> <td>D</td> <td>AE LI-547</td> <td>Indication</td> </tr> <tr> <td></td> <td>AE LI-548</td> <td>Indication</td> </tr> <tr> <td></td> <td>AE LI-549</td> <td>Control</td> </tr> <tr> <td></td> <td>AE LI-554</td> <td>Control</td> </tr> </tbody> </table>	S/G	INDICATION	FUNCTION	D	AE LI-547	Indication		AE LI-548	Indication		AE LI-549	Control		AE LI-554	Control
S/G	INDICATION	FUNCTION															
D	AE LI-547	Indication															
	AE LI-548	Indication															
	AE LI-549	Control															
	AE LI-554	Control															
	SRO, BOP	<p>F2. Check Failed S/G Level Channel Selected On SG LEV CHANNEL SEL Switch</p> <ul style="list-style-type: none"> * AE LS-519C * AE LS-529C * AE LS-539C * AE LS-549C 															
	SRO, BOP	F3. Check Main Feed Reg Valve In Control; No, Perform RNO															
	SRO, BOP	<p>F3 RNO Perform the following:</p> <p>1. Place Affected SG MFW REG BYPASS CTRL – IN MANUAL</p> <ul style="list-style-type: none"> * AE LK-550 * AE LK-560 * AE LK-570 * AE LK-580 <p>2. Adjust affected SG MFW REG BYPASS CTRL, as necessary, to establish Steam Generator level at program.</p> <ul style="list-style-type: none"> * AE LK-550 * AE LK-560 * AE LK-570 * AE LK-580 <p>EXAMINER NOTE: BOP placed AE LK-580 in Manual and depresses the DOWN ARROW pushbutton to match steam and feed flow, restoring Steam Generator level.</p>															

Op-Test No.: _____ Scenario No.: 3 Event No.: 2Page 9 of 35Event Description: Steam Generator 'D' level channel, AE LI-549 (controlling channel), fails low.

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	<p>F4. Select Alternate S/G Level Channel On SG LEV CHANNEL SEL Switch:</p> <ul style="list-style-type: none"> * AE LS-519C * AE LS-529C * AE LS-539C * AE LS-549C <p>EXAMINER NOTE: BOP selects channel L554 on SG D LEV CHANNEL SEL, AE LS-549C. Alarm 111A clears when alternate channel selected.</p>
	SRO, BOP	<p>F5. Restore Affected S/G MFW REG VLV CTRL To – AUTO; No Perform RNO</p> <p>RNO F5. Restore Affected S/G SG MFW REG BYPASS CTRL To – AUTO</p> <ul style="list-style-type: none"> * AE LK-550 * AE LK-560 * AE LK-570 * AE LK-580 <p>EXAMINER NOTE: At direction of SRO, BOP places AE LK-580 to AUTO.</p>
	SRO	<p>F6. Monitor The Following Technical Specifications For LCOs And Comply With Action Statements, As Appropriate:</p> <ul style="list-style-type: none"> • 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Table 3.3.1-1, Function 14 • 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION, Table 3.3.2-1, Functions 5.c And 6.d • 3.3.4, REMOTE SHUTDOWN INSTRUMENTATION, Table 3.3.4-1, Function 8 • 3.3.3, ACCIDENT MONITORING INSTRUMENTATION, Table 3.3.3-1, Function 13 <p>SRO identifies: TS 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 14 Condition E (72 hours to trip bistables) is identified.</p> <p>TS 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.2-1, Fu 5.c and 6.d are identified. Conditions I and D (72 hours to trip bistables) respectively.</p>
<p>Event termination: Instrument failure identified; SRO identified applicable Technical Specifications or at Lead Examiner Discretion.</p> <p>Simulator Operator: Insert Key 3 at direction of Lead Examiner.</p>		

Op-Test No.: _____	Scenario No.: <u>3</u>	Event No.: <u>3</u>	Page <u>10</u> of <u>35</u>
Event Description: <u>Normal Charging Pump (NCP) trip.</u>			
Time	Position	Applicant's Actions or Behavior	
Simulator Operator: Insert Key 3 at direction of Lead Examiner.			
Diagnostics: When NCP trips, MCB alarms 00-042A, CHG LINE FLOW HILO, 00-042E, CHARGING PUMP TROUBLE and 00-041A, SEAL INJ TO RCP FLOW LO, annunciate.			
EXAMINER NOTE: ALR 00-042A, rev 15, CHG LINE FLOW HILO, the higher tier alarm, is included just in case the SRO enters it. ALR 42A directs the crew to ALR 42E at step 1 RNO.			
	SRO, ATC, BOP	Crew diagnoses component failure. ALR 00-042A, CHG LINE FLOW HILO, entered. SRO directs ALR 00-042A, CHG LINE FLOW HILO	
	ATC	(SRO direction/Memory Action) Close Letdown Orifice Isolation valves. CLOSE pushbuttons for LTDN ORIFICE B VLV, BG HIS-8149BA and LTDN ORIFICE A VLV, BG HIS-8149AA, are depressed.	
CAUTION: If gas binding of pumps is suspected, performance of OFN BG-045, GAS BINDING OF CCPS OR SI PUMPS, should be considered.			
NOTE: Step 1 is a Memory Action step.			
	SRO, ATC	1. Check Charging Pumps – ANY RUNNING; No, Perform RNO * BG HIS-1A For CCP A * BG HIS-2A For CCP B * BG HIS-3 For NCP	
	SRO, ATC	1 RNO Perform the following: a. Close Letdown Orifice Isolation valves: • BG HIS-8149AA • BG HIS-8149BA • BG HIS-8149CA b. Go to ALR 00-042E, CHARGING PUMP TROUBLE.	
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status. If contacted as Electrical Maintenance, acknowledge request.			

Op-Test No.: _____ Scenario No.: 3 Event No.: 3Page 11 of 35Event Description: Normal Charging Pump (NCP) trip.ALR 00-042E, CHARGING PUMP TROUBLE

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	Crew diagnoses component failure. ALR 00-042E, rev 12, CHARGING PUMP TROUBLE, entered. SRO directs ALR 00-042E, CHARGING PUMP TROUBLE
	ATC	(SRO direction/Memory Actions) Determine NCP tripped and no charging pumps are running. Close Letdown Orifice Isolation valves: CLOSE pushbuttons for LTDN ORIFICE B VLV, BG HIS-8149BA and LTDN ORIFICE A VLV, BG HIS-8149AA, are depressed.
NOTE: Steps 1 through 3 are Memory Action steps.		
	SRO, ATC	1. Check Previously Running Charging Pump - TRIPPED <ul style="list-style-type: none"> • BG HIS-1A For CCP A • BG HIS-2A For CCP B • BG HIS-3 For NCP
	SRO, ATC	2. Check Charging Pumps – NONE RUNNING <ul style="list-style-type: none"> • BG HIS-1A For CCP A • BG HIS-2A For CCP B • BG HIS-3 For NCP
	SRO, ATC	3. Close Letdown Orifice Isolation Valves. <ul style="list-style-type: none"> • BG HIS-8149AA • BG HIS-8149BA • BG HIS-8149CA
	SRO, ATC	4. Contact Electrical Maintenance To Determine Cause Of Pump Trip.
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status. If contacted as Electrical Maintenance, acknowledge request.		
CAUTION: If gas binding of pumps is suspected, performance of OFN BG-045, GAS BINDING OF CCPS OR SI PUMPS, should be considered.		
NOTE: Total pump flow should be maintained above 175 gpm to minimize the effects of low flow cavitation.		

Op-Test No.: _____ Scenario No.: 3 Event No.: 3Page 12 of 35Event Description: Normal Charging Pump (NCP) trip.

Time	Position	Applicant's Actions or Behavior
	SRO, ATC	5. Establish Charging Flow: a. Check RC Temperature – GREATER THAN 350°F b. Start CCP aligned for normal charging. * BG HIS-1A For CCP A * BG HIS-2A For CCP B EXAMINER NOTE: ATC should start CCP 'B.'
	SRO, ATC	5.c. Go to step 6
	SRO, ATC	6. Ensure RCP Seal Injection – BETWEEN 8 GPM AND 13 GPM EACH RCP • BG FR-157 For RCP A • BG FR-156 For RCP B • BG FR-155 For RCP C • BG FR-154 For RCP D
EXAMINER NOTE: To adjust seal flow, ATC uses CCP DISCH FLOW CTRL, BG FK-121 and CHG HDR BACK PRESS CTRL, BG HC-182. Nearby meters BG FI-215B, CHG PUMP TO RCP SEAL FLOW or BG FI-215A, CHG PUMP TO RCP SEAL FLOW, are used to monitor seal flow adjustment.		
	SRO, ATC	7. Reestablish Letdown a. Check RCS Letdown To Regen HX valves open. • BG HIS-459 • BG HIS-460
	SRO, ATC	b. Place letdown HX Outlet Pressure Control in manual. • BG PK-131
	SRO, ATC	c. Open Letdown HX Outlet Pressure Control between 90% and 100%. • BG PK-131
	SRO, ATC	d. Open desired Letdown Orifice Isolation Valve(s). * BG HIS-8149AA * BG HIS-8149BA * BG HIS-8149CA EXAMINER NOTE: At a minimum, a 75-gpm orifice is opened, e.g. BG HIS-8149AA or BG HIS-8149BA. Since 120 gpm letdown at start of scenario, the CRS directs 120 gpm letdown restored.

Op-Test No.: _____ Scenario No.: 3 Event No.: 3Page 13 of 35Event Description: Normal Charging Pump (NCP) trip.

Time	Position	Applicant's Actions or Behavior
	SRO, ATC	e. Adjust Letdown HX Outlet Pressure Control to establish Letdown HX Outlet Pressure between 340 psig and 360 psig. <ul style="list-style-type: none"> • BG PI-131
	SRO, ATC	f. Place Letdown HX Outlet Pressure Control in auto. <ul style="list-style-type: none"> • BG PK-131
	SRO, ATC	8. Check Charging Header Flow And Letdown Flow – BALANCED; If No, Perform RNO 8. RNO. Adjust charging and letdown, as necessary, to maintain PZR level at program value.
	SRO, ATC	9. Verify CCP Adequate Flow: a. Check CCPs – ANY RUNNING <ul style="list-style-type: none"> * BG HIS-1A For CCP A * BG HIS-2A For CCP B b. Check CCP Recirc Valve - OPEN <ul style="list-style-type: none"> * BG HIS-8110 For CCP A * BG HIS-8111 For CCP B
	SRO	10. Ensure Compliance With Technical Specifications And TRM: a. Check Plant – IN MODES 1, 2 OR 3 b. Refer to TR 3.1.9 and Technical Specification 3.5.2 EXAMINER NOTE: Neither TR 3.1.9 or TS 3.5.2 apply.
	SRO	11. Return To Procedure And Step In Effect.
Event termination: CCP 'A' or 'B' running, Letdown restored, PZR level trending to program value; or at Lead Examiner Discretion.		
Simulator Operator: Insert Key 4 at direction of Lead Examiner.		

Op-Test No.: _____	Scenario No.: <u>3</u>	Event No.: <u>4</u>	Page <u>14</u> of <u>35</u>
Event Description: <u>Steam Generator "B" Atmospheric Relief Valve (ARV) fails open, manual closure available.</u> _____ _____			
Time	Position	Applicant's Actions or Behavior	
Simulator Operator: Insert Key 4 at direction of Lead Examiner. Diagnostics: Audible noise, Steam dumps closing, 'B' ARV indications OPEN (SG B STEAM DUMP TO ATMS AB ZL-2A – Red light LIT), RCS/PZR temperature decreasing, PZR pressure decreasing.			
	SRO, ATC, BOP	Crew diagnoses component failure. SRO directs BOP to manually close ARV 'B'	
	BOP	At SG B STEAM DUMP TO ATMS CTRL, AB PIC, 2A, depresses the MAN pushbutton. Using the joystick lever, moves it to the left, to 0 output, CLOSING the 'B' ARV. EXAMINER NOTE: 'B' ARV indications CLOSE (SG B STEAM DUMP TO ATMS AB ZL-2A – Green light LIT)	
EXAMINER NOTE: Per AP 15C-003, rev 29, step 6.1.7, the Operator should take manual control when components are not performing correctly.			
EXAMINER NOTE: Included is procedure guidance from OFN AB-041, rev 3A, STEAMLINE OR FEEDLINE LEAK. Step 5 identifies and closes the open ARV.			
	SRO, ATC, BOP	Crew diagnoses component failure. Crew enters procedure OFN AB-041, STEAMLINE OR FEEDLINE LEAK. SRO directs OFN AB-041, STEAMLINE OR FEEDLINE LEAK.	
CAUTION: Caution is necessary when locating steam leaks. Leakage from high temperature, high pressure systems may not be visible. NOTE: When the leak location is identified, an announcement should be made, the area should be evacuated and flagged off to prevent entry.			
	SRO, ATC	<u>1.</u> Check Reactor Power – LESS THAN 100% <ul style="list-style-type: none"> • SE NI-41B • SE NI-42B • SE NI-43B • SE NI-44B 	

Op-Test No.: _____ Scenario No.: 3 Event No.: 4Page 15 of 35Event Description: Steam Generator "B" Atmospheric Relief Valve (ARV) fails open, manual closure available

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	2. Check Steam Generator Levels, - STABLE OR TRENDING TO PROGRAM
	SRO, ATC	3. Check Tref/Tavg Deviation – LESS THAN 3°F <ul style="list-style-type: none"> • 00-065D – NOT LIT
	SRO, BOP	4. Check Condenser Hot Well Level – STABLE OR INCREASING <ul style="list-style-type: none"> • AD LI-114
	SRO, BOP	5. Ensure SG ARVs – CLOSED and RNO <ul style="list-style-type: none"> • AB PIC-1A For S/G A • AB PIC-2A For S/G B • AB PIC-3A For S/G C • AB PIC-4A For S/G A <p>At SG B STEAM DUMP TO ATMS CTRL, AB PIC, 2A, depresses the MAN pushbutton. Using the joystick lever, moves it to the left, to 0 output, CLOSING the 'B' ARV.</p> <p>EXAMINER NOTE: 'B' ARV indications CLOSE (SG B STEAM DUMP TO ATMS AB ZL-2A – Green light LIT)</p>
	SRO, BOP	5. RNO Perform the following: <p>a. IF any valve can NOT be closed, THEN dispatch operator to locally isolate affected S/G ARV. (MAIN STEAM ENCLOSURE ABOVE GRATING)</p> <ul style="list-style-type: none"> • AB-V018 For S/G A • AB-V040 For S/G B • AB-V029 For S/G C • AB-V007 For S/G D <p>b. Refer to Tech Spec 3.7.4</p>
	SRO	SRO refers to Technical Specification 3.7.4 <p>SRO identifies: TS 3.7.4, ATMOSPHERIC RELIEF VALVES (ARVs), Condition A (7 days to restore to OPERABLE status).</p>

Event termination: 'B' ARV in manual and closed and SRO identified applicable Technical Specification or at Lead Examiner Discretion.

Simulator Operator: Insert Key 5 at direction of Lead Examiner.

Op-Test No.: _____	Scenario No.: <u> 3 </u>	Event No.: <u> 5 </u>	Page <u>16</u> of <u>35</u>
Event Description: <u>Major event: 'B' Steamline break outside Containment</u>			
Time	Position	Applicant's Actions or Behavior	
Simulator Operator: Insert Key 5 at direction of Lead Examiner. (Leak size is 1.2 E+6 lb/hr ramped in over three minutes)			
Diagnostics: Increased audible noise, Steam dumps closing, RCS temperature decreasing, RCS/PZR pressure decreasing. Main Control Board alarm: 00-096C, TURB BLD SUMP LEV HI.			
Simulator Operator: If contacted, respond as Building Watch – steam is issuing from vent opening at 2000 ft elevation, south end of Turbine Building.			
	SRO, ATC, BOP	Crew diagnoses steam line break. Crew may enter OFN AB-041, STEAM LINE OR FEEDLINE BREAK. Based on plant conditions, Crew determines a manual reactor trip is required. SRO directs reactor trip. Crew enters EMG E-0, rev 31, REACTOR TRIP OR SAFETY INJECTION. ATC and BOP perform Immediate Actions. EXAMINER NOTE: If SRO doesn't direct a manual Safety Injection (SI) actuation, an automatic SI occurs on steam line pressure 615 psig.	
EXAMINER NOTE: While the ATC and BOP are required to know all Immediate Action steps, the ATC performs Immediate Action steps 1, <u>3</u> , and 4 whereas the BOP performs Immediate Action step 2. Immediate Action steps are performed prior to the reading aloud of EMG E-0, REACTOR TRIP OR SAFETY INJECTION.			
CAUTION: Accident conditions can cause higher than normal radiation levels. Health Physics monitoring may be required while performing local operator actions.			
NOTES: <ul style="list-style-type: none"> • Steps 1 through 4 are immediate action steps. • Foldout page shall be monitored throughout this procedure. 			

Op-Test No.: _____ Scenario No.: 3 Event No.: 5Page 17 of 35Event Description: Major event: 'B' Steamline break outside Containment**Critical Task (CT): Isolate Auxiliary Feedwater (AFW) to the Faulted Steam Generator before completion of EMG E-2.**

Time	Position	Applicant's Actions or Behavior
FOLDOUT PAGE CRITERIA		
1. RCP TRIP CRITERIA 2. SI ACTUATION CRITERIA 3. FAULTED S/G ISOLATION CRITERIA IF any S/G pressure decreasing in an uncontrolled manner OR any S/G is completely depressurized, THEN perform the following: a. Close main steam isolation valves b. Isolate feed flow to faulted S/G(s). c. Maintain total feed flow greater than 270, 000 lbm/hr until NR level in at least one S/G is greater than 6% [29%] 4. RUPTURED S/G ISOLATION CRITERIA 5. COLD LEG RECIRCULATION CRITERIA 6. AFW SUPPLY SWITCHOVER CRITERIA 7. RCS TEMPERATURE CONTROL * IF a Loss-Of-Offsite Power has occurred, THEN close MSIVs. * AB HS-79 * AB HS-80 * IF no RCPs are running AND off-site power is available, THEN select STM PRESS mode on the steam dumps. • AB US-500Z. * IF RCS C/L temperature is less than 557°F AND decreasing, THEN control total feed flow to limit RCS cooldown. * Maintain total feed flow greater than 270, 000 lbm/hr until narrow range is greater than 6% [29%] in at least one S/G		
EXAMINER NOTE: Simulator Operator will collect Time Critical data for Time Critical Task, Isolate AFW to Faulted Steam Generator.		
EXAMINER NOTE: Once BOP Immediate Actions are complete and reported complete to the SRO, the BOP is directed to perform Foldout Page Criteria #3, FAULTED S/G ISOLATION CRITERIA, to isolate the faulted Steam Generator. Once the MSIV's are closed, and based on higher steam flow, Steam Generator 'B' will be diagnosed as the faulted Steam Generator. Auxiliary Feedwater (AFW) flow is isolated to the faulted Steam Generator.		
The BOP will also perform Foldout Page Criteria #7, RCS TEMPERATURE CONTROL, maintaining AFW to Steam Generators 'A', 'C' and 'D'.		
	SRO, BOP	FAULTED S/G ISOLATION CRITERIA: Isolate Steam Generator 'B' Depress either MS ISO VLVS AB HS-79 or AB HS-80 to close the MSIVs. CT Isolate AFW to Faulted Steam Generator: Close AL HK-9A, SG B MD AFP AFW REG VLV CTRL and AL HK-10A, SG B TD AFP AFW REG VLV CTRL, move lever to left, 0 output displayed, CLOSED Green light LIT, isolating AFW to the faulted Steam Generator.

[illegible]

[illegible]

Op-Test No.: _____ Scenario No.: 3 Event No.: 5Page 20 of 35Event Description: Major event: 'B' Steamline break outside ContainmentEMG E-0, REACTOR TRIP OR SAFETY INJECTION

Time	Position	Applicant's Actions or Behavior
	SRO, ATC	1. Verify Reactor Trip: a. Check all rod bottom lights - LIT b. Check reactor trip breakers and bypass breakers - OPEN <ul style="list-style-type: none"> • SB ZL-1 • SB ZL-2 • SB ZL-3 • SB ZL-4 c. Check intermediate range neutron flux - DECREASING <ul style="list-style-type: none"> • SE NI-35B [GAMMA METRICS] • SE NI-36B [GAMMA METRICS]
	SRO, BOP	2. Verify turbine Trip: a. Check Main Stop Valves – ALL CLOSED
	SRO, ATC	3. Check AC Emergency Busses – AT LEAST ONE ENERGIZED <ul style="list-style-type: none"> * NB01 – ENERGIZED * NB02 - ENERGIZED
EXAMINER NOTE: NB01 is energized by its EDG. NB02 is energized by offsite power.		
	SRO, ATC	4. Check If Safety Injection Is Actuated: a. Check any indication SI is actuated - LIT <ul style="list-style-type: none"> * Annunciator 00-030A, NF039A LOCA SEQ ACTUATED – LIT * Annunciator 00-031A, NF039B LOCA SEQ ACTUATED – LIT * ESFAS status panel SIS section – ANY WHITE LIGHTS LIT * Partial Trip Status Permissive/ Block status panel – SI RED LIGHT LIT b. Check both trains of SI actuated. <ul style="list-style-type: none"> • Ann 00-030A, NF039A LOCA SEQ ACTUATED – LIT • Ann 00-031A, NF039B LOCA SEQ ACTUATED – LIT
EXAMINER NOTE: The crew may have decided to actuate Safety Injection (SI) earlier. It will automatically occur based on Steam line pressure.		
EXAMINER NOTE: If RCS pressure drops below 1400 psig, the SRO will direct the RCPs be secured per Foldout page item #1, RCP TRIP CRITERIA. (During NRC Validation week, the RCPs were secured.)		

Op-Test No.: _____	Scenario No.: <u>3</u>	Event No.: <u>5</u>	Page <u>21</u> of <u>35</u>
Event Description: <u>Major event: 'B' Steamline break outside Containment</u>			
<u>EMG E-0, REACTOR TRIP OR SAFETY INJECTION</u>			
Time	Position	Applicant's Actions or Behavior	
CAUTION: If offsite power is lost after SI reset, manual action may be required to restore safeguards equipment to the required configuration.			
	SRO, ATC, BOP	5. Check if SI is required: <ul style="list-style-type: none"> * SI was manually actuated AND was required * Containment pressure is currently or has been – GREATER THAN OR EQUAL TO 3.5 PSIG * RCS pressure is currently or has been – LESS THAN OR EQUAL TO 1830 PSIG * Any S/G pressure is currently or has been – LESS THAN OR EQUAL TO 615 PSIG 	
	SRO, BOP	6. Check Main Generator Breakers And Exciter Breaker – OPEN <ul style="list-style-type: none"> • MA ZL-3A • MA ZL-4A • MB ZL-2 	
	SRO, ATC, BOP	7. Verify Automatic Actions Using Attachment F, AUTOMATIC SIGNAL VERIFICATION	
	SRO, BOP	8. Check Total AFW Flow – GREATER THAN 270, 000 LBM/HR	
EXAMINER NOTE: AFW is isolated to Steam Generator 'B'. Steam Generator levels recover faster at low power.			
	SRO, BOP	9. Check RCS Cold Leg Temperatures; If No, Perform RNO <ul style="list-style-type: none"> * Stable at or trending to 557°F for condenser steam dumps * Stable at or trending to 561°F for S/G ARVs * Stable at or trending to 557°F for S/G ARVs if recovering from an inadvertent SI. 	

Op-Test No.: _____ Scenario No.: 3 Event No.: 5Page 22 of 35Event Description: Major event: 'B' Steamline break outside ContainmentEMG E-0, REACTOR TRIP OR SAFETY INJECTION

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	<p>9. RNO Perform the following:</p> <p>a. IF temperature is less than setpoint and decreasing, THEN perform the following:</p> <ol style="list-style-type: none"> 1. Stop dumping steam. 2. IF any MSIV is open, THEN close Main Turbine Stop And Control Valves Startup Drains. <ul style="list-style-type: none"> • AC HIS-134 3. IF cooldown continues, THEN control total feed flow to limit RCS cooldown. Maintain total feed flow greater than 270, 000 lbm/hr until narrow range level greater than 6% [29%] in at least one S/G. 4. IF cooldown continues due to excessive steam flow, THEN isolate main steamlines by depressing MS ISO VLV ALL CLOSE pushbutton(s). <ul style="list-style-type: none"> * AB HS-79 * AB HS-80 <p>b. IF temperature is greater than setpoint and increasing, THEN perform one of the following:</p> <ul style="list-style-type: none"> * Dump steam to condenser * Dump steam using S/G ARV.
	SRO, BOP	<p>10. Establish S/G Pressure Control:</p> <p>a. Check condenser – AVAILABLE; No, Perform RNO</p> <ul style="list-style-type: none"> • C-9 LIT • MSIV – OPEN • Circulating water pumps – RUNNING <p>10. RNO a. Perform the following:</p> <ol style="list-style-type: none"> 1. Use S/G ARVs. 2. Go to Step 11.
	SRO, ATC, BOP	<p>11. Check PZR PORVs</p> <p>a. Check PZR PORVs - CLOSED</p> <ul style="list-style-type: none"> • BB HIS-455A • BB HIS-456A <p>b. Power to block valves - AVAILABLE</p> <ul style="list-style-type: none"> • BB HIS-8000A • BB HIS-8000B <p>c. RCS pressure – LESS THAN 2185 PSIG</p>

Op-Test No.: _____ Scenario No.: 3 Event No.: 5Page 23 of 35Event Description: Major event: 'B' Steamline break outside ContainmentEMG E-0, REACTOR TRIP OR SAFETY INJECTION

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	12. Check Normal PZR Spray Valves – CLOSED <ul style="list-style-type: none"> • BB ZL-455B • BB ZL-455C
	SRO, ATC, BOP	13. Check PZR Safety Valves – CLOSED <ul style="list-style-type: none"> • BB ZL-8010A • BB ZL-8010B • BB ZL-8010C
NOTE: Seal injection flow shall be maintained to all RCPs.		
	SRO, ATC, BOP	14. Check If RCPs Should Be Stopped: <ul style="list-style-type: none"> a. Check RCPs – ANY RUNNING; If No, Perform RNO. b. Check RCS pressure – LESS THAN 1400 PSIG; No, Perform RNO 14. a. RNO a. Go to Step 15. 14. b. RNO b. Go to Step 15.
	SRO	15. Direct Operator To Monitor Critical Safety Functions Using EMG F-0, CRITICAL SAFETY FUNCTION STATUS TREES (CSFST).
	SRO, BOP	16. Check If S/Gs Are Not Faulted: <ul style="list-style-type: none"> a. Check pressure in all S/Gs - <ul style="list-style-type: none"> • NO S/G PRESSURE DECREASING IN AN UNCONTROLLED MANNER • NO S/G COMPLETELY DEPRESSURIZED No, Perform RNO EXAMINER NOTE:S/G B is decreasing pressure in an uncontrolled manner and will eventually be completely depressurized. 16. RNO a. Perform the following: <ol style="list-style-type: none"> 1. Ensure BIT Inlet and Outlet Valves are open <ul style="list-style-type: none"> • EM HIS-8803A • EM HIS-8803B • EM HIS-8801A • EM HIS-8801B 2. Go to EMG E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.

Op-Test No.: _____ Scenario No.: 3 Event No.: 5Page 24 of 35Event Description: EMG E-0 REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT F,
AUTOMATIC SIGNAL VERIFICATION

Time	Position	Applicant's Actions or Behavior
	ATC, BOP	F1. Check AC Emergency Busses – ENERGIZED <ul style="list-style-type: none"> • NB01 – ENERGIZED • NB02 – ENERGIZED
	ATC, BOP	F2. Verify Feedwater Isolation <ul style="list-style-type: none"> a. Main feedwater pumps - TRIPPED <ul style="list-style-type: none"> • Annunciator 00-120A, MFP A TRIP – LIT • Annunciator 00-123A, MFP B TRIP – LIT b. Main feedwater reg valves - CLOSED <ul style="list-style-type: none"> • AE ZL-510 for S/G A • AE ZL-520 for S/G B • AE ZL-530 for S/G C • AE ZL-540 for S/G D c. Main feedwater reg bypass valves - CLOSED <ul style="list-style-type: none"> • AE ZL-550 for S/G A • AE ZL-560 for S/G B • AE ZL-570 for S/G C • AE ZL-580 for S/G D d. Main feedwater isolation valves – CLOSED <ul style="list-style-type: none"> • AE HIS-39 for S/G A • AE HIS-40 for S/G B • AE HIS-41 for S/G C • AE HIS-42 for S/G D e. Main feedwater chemical injection valves – CLOSED <ul style="list-style-type: none"> • AE HIS-43 for S/G A • AE HIS-44 for S/G B • AE HIS-45 for S/G C • AE HIS-46 for S/G D f. Check ESFAS status panel SGBSIS section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> • Red train • Yellow train
	ATC, BOP	F3. Verify Containment Isolation Phase A: <ul style="list-style-type: none"> a. Check ESFAS status panel CISA section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> • Red train • Yellow train

Op-Test No.: _____	Scenario No.: <u>3</u>	Event No.: <u>6 and 7</u>	Page <u>25</u> of <u>35</u>
Event Description: <u>EMG E-0, ATTACHMENT F, AUTOMATIC SIGNAL VERIFICATION</u> CT – Manually start at least the minimum required number of ESW pumps in an operating safeguards train before required Diesel Generator(s) trip, e.g. EDG ‘A’ or before the completion of Attachment F of EMG E-0. CT – Manually start at least one CCW pump in the train with required ECCS equipment operating before completion of Attachment F of EMG E-0.			
Time	Position	Applicant's Actions or Behavior	
	ATC, BOP	F4. Verify AFW Pumps Running: a. Check motor driven AFW pumps – BOTH RUNNING b. Check turbine driven AFW pump - RUNNING	
	ATC, BOP	F5. Verify ECCS Pumps Running: a. Check CCPs – BOTH RUNNING b. Check SI pumps – BOTH RUNNING c. Check RHR pumps – BOTH RUNNING	
	ATC, BOP	F6. Verify CCW Alignment: a. Check CCW pumps – ONE RUNNING IN EACH TRAIN; No, Perform RNO F6. a. RNO a. Manually start CCW pumps as necessary to establish one running in each train. <ul style="list-style-type: none"> • EG HIS 21 or EGHSI-23 for red train • EG HIS-22 or EG HIS-24 for yellow train CT – Manipulate CCW PUMP D handswitch EG HIS-24 to RUN position, starting CCW ‘D’ pump, providing cooling water to ECCS loads.	
	ATC, BOP	F6 Verify CCW Alignment b. Check one pair of CCW service loop Supply And Return Valves for an operating CCW pump - OPEN <ul style="list-style-type: none"> * EG ZL-15 AND EG ZL-53 * EG ZL-16 AND EG ZL-54 <p style="text-align: center;">OR</p>	
	ATC, BOP	F7. Check ESW Pumps – BOTH RUNNING; No, Perform RNO F7 RNO Manually start pumps. <ul style="list-style-type: none"> • EF HIS-55A • EF HIS-56A CT – Manipulate ESW PUMP A handswitch EF HIS-55A to RUN position, starting ESW ‘A’ pump before the EDG ‘A’ trips.	

Op-Test No.: _____ Scenario No.: 3 Event No.: 5Page 26 of 35Event Description: EMG E-0, ATTACHMENT F, AUTOMATIC SIGNAL VERIFICATION

Time	Position	Applicant's Actions or Behavior
	ATC, BOP	F8. Check Containment Fan Coolers – RUNNING IN SLOW SPEED
	ATC, BOP	F9. Verify Containment Purge Isolation: a. Check ESFAS status panel CPIS section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> • Red train • Yellow train
	ATC, BOP	F10. Verify Both Trains Of Control Room Ventilation Isolation: a. Check ESFAS status panel CRIS section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> • Red train • Yellow train b. Ensure Control Room outer door - CLOSED
	ATC, BOP	F11. Verify Main Steamline Isolation Not Required: a. Check containment pressure – HAS REMAINED LESS THAN 17 PSIG <ul style="list-style-type: none"> • GN PR-934 b. Check either condition below - SATISFIED <ul style="list-style-type: none"> * Low steamline pressure SI – NOT BLOCKED AND steam line pressure – HAS REMAINED GREATER THAN 615 PSIG OR * Low steamline pressure SI – BLOCKED AND steamline pressure rate – HAS REMAINED LESS THAN 100 PSI/50 SEC
	ATC, BOP	<u>F12.</u> Verify Containment Spray Not Required: a. Containment pressure – HAS REMAINED LESS THAN 27 PSIG: <ul style="list-style-type: none"> • Annunciator 00-059A, CSAS - NOT LIT • Annunciator 00-059B, CISB – NOT LIT • GN PR-934
	ATC, BOP	F13. Verify ECCS Flow: a. Check Centrifugal Charging Pumps TO Boron Injection Tank Flow meters – FLOW INDICATED <ul style="list-style-type: none"> • EM FI-917A • EM FI-917B b. Check RCS pressure – LESS THAN 1700 PSIG; No, Perform RNO F13 RNO b. Go to Step F14.

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[illegible]

Op-Test No.: _____	Scenario No.: <u>3</u>	Event No.: <u>5</u>	Page <u>28</u> of <u>35</u>
Event Description: <u>EMG E-2, FAULTED STEAM GENERATOR ISOLATION</u>			
Time	Position	Applicant's Actions or Behavior	
EXAMINER NOTE: While waiting for Attachment F completion, SRO may lead a Transition Brief prior to entry into EMG E-2, rev 17, FAULTED STEAM GENERATOR ISOLATION.			
CAUTIONS <ul style="list-style-type: none"> At least on S/G shall be maintained available for RCS cooldown. If any faulted S/G or secondary break is not needed for RCS cooldown, it shall remain isolated during subsequent recovery actions. 			
NOTE: Foldout page shall be monitored throughout this procedure.			
FOLDOUT PAGE CRITERIA			
1. RCP TRIP CRITERIA			
2. RCS TEMPERATURE CONTROL CRITERIA			
WHEN uncontrolled RCS cooldown has stopped, THEN control steam flow and feed flow as necessary to maintain stable RCS hot leg temperatures			
3. COLD LEG RECIRCULATION CRITERIA			
4. AFW SUPPLY SWITCHOVER CRITERIA			
	SRO, BOP	1. Check Steamlines On All S/Gs - ISOLATED a. Ensure Main Steamline Isolation Valve(s) - CLOSED <ul style="list-style-type: none"> AB HIS-14 For S/G A AB HIS-17 For S/G B AB HIS-20 For S/G C AB HIS-11 For S/G D b. Ensure Main Steamline Isolation Bypass Valves - CLOSED <ul style="list-style-type: none"> AB ZL-15A For S/G A AB ZL-18A For S/G B AB ZL-21A For S/G C AB ZL-12A For S/G D c. Ensure Main Steamline Low Point Drain Valve(s) - CLOSED <ul style="list-style-type: none"> AB HIS-9 For S/G A AB HIS-8 For S/G B AB HIS-7 For S/G C AB HIS-10 For S/G D 	

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Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	2. Check If Limitations For Fault In Area 5 Are Required: <ul style="list-style-type: none"> a. Check if steam is issuing from vent openings at 2000 foot elevation on south end of Turbine Building. b. Warn local operators of adverse conditions in main steam enclosure. c. Use S/G ARV pressure indicating controllers on RL006 for S/G pressure indication during subsequent recovery actions. d. Use pressure and flow indications to determine valve position for valves located in the main steam enclosure. e. Do not reset AFAS-TD until Turbine Driven AFW Pump shutdown is required. f. Use manual initiation of AFAS-TD, as necessary, to restart Turbine Driven AFW Pump.
Simulator Operator: Respond as Building Watch – steam is issuing from vent opening at 2000 ft elevation, south end of Turbine Building.		
EXAMINER NOTE: RCS pressure will be cycling on the PORV.		
	SRO, BOP	3. Check If Any S/G Is Not Faulted: <ul style="list-style-type: none"> a. Check pressure in all S/Gs: <ul style="list-style-type: none"> * ANY S/G PRESSURE STABLE * ANY S/G PRESSURE INCREASING <p style="text-align: right;">OR</p> <p>EXAMINER NOTE: S/Gs 'A', 'C' and 'D' are not faulted.</p>
	SRO, BOP	4. Identify Faulted S/Gs: <ul style="list-style-type: none"> a. Check pressure in all SGs: <ul style="list-style-type: none"> * ANY S/G PRESSURE DECREASING IN AN UNCONTROLLED MANNER * ANY S/G COMPLETELY DEPRESSURIZED <p>EXAMINER NOTE: S/G 'B' pressure is decreasing in an uncontrolled manner.</p>
CAUTION: If the Turbine Driven AFW Pump is the only available source of feed flow, steam supply to the Turbine Driven AFW Pump must be maintained from at least one S/G.		

Op-Test No.: _____ Scenario No.: 3 Event No.: 5Page 30 of 35Event Description: EMG E-2, FAULTED STEAM GENERATOR ISOLATION**Critical Task (CT): Isolate Auxiliary Feedwater (AFW) to the Faulted Steam Generator before completion of EMG E-2 is performed.****This CT was performed earlier in EMG E-0.**

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	<p>5. Isolate Faulted S/G(s):</p> <p>a. Close affected S/G(s) MD AFW Flow Control Valve(s).</p> <ul style="list-style-type: none"> * AL HK-7A For S/G A * AL HK-9A For S/G B * AL HK-11A For S/G C * AL HK-5A For S/G D <p>b. Close affected S/G(s) TD AFWP Flow Control Valve(s).</p> <ul style="list-style-type: none"> * AL HK-8A For S/G A * AL HK-10A For S/G B * AL HK-12A For S/G C * AL HK-6A For S/G D <p>c. Locally close steam supply to Turbine Driven AFW Pump from ruptured S/G(s).</p> <ul style="list-style-type: none"> * AB-V085 For S/G B (MAIN STEAM ENCLOSURE BELOW GRATING) * AB-V087 For S/G C (MAIN STEAM ENCLOSURE BELOW GRATING) <p>d. Ensure S/G ARV on faulted S/G(s) - CLOSED</p> <ul style="list-style-type: none"> * AB PIC-1A For S/G A * AB PIC-2A For S/G B * AB PIC-3A For S/G C * AB PIC-4A For S/G D <p>CT: AL HK-9A, AL HK-10A are closed (move lever to left, 0 output displayed, CLOSED Green light LIT) if not already closed per EMG E-0 Foldout page criteria, FAULTED S/G ISOLATION.</p>
<p>Simulator Operator: When called as Building Watch to isolate AB-V085 For S/G B (MAIN STEAM ENCLOSURE BELOW GRATING), report that when Main Steam Enclosure area clears, the valve will be closed.</p> <p>Monitor S/G pressure and level – when it is blown dry, insert Key 6 to close AB-V085. Report to Control Room when valve is closed.</p>		

Op-Test No.: _____ Scenario No.: 3 Event No.: 5Page 31 of 35Event Description: EMG E-2, FAULTED STEAM GENERATOR ISOLATION

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	6. Verify Feedline Isolated On Faulted S/G(s): a. Main Feedwater Reg Valve - CLOSED * AE ZL-510 For S/G A * AE ZL-520 For S/G B * AE ZL-530 For S/G C * AE ZL-540 For S/G D b. Main Feedwater Reg Bypass Valve - CLOSED * AE ZL-550 For S/G A * AE ZL-560 For S/G B * AE ZL-570 For S/G C * AE ZL-580 For S/G D c. Main Feedwater Isolation Valve – CLOSED * AE HIS-39 For S/G A * AE HIS-40 For S/G B * AE HIS-41 For S/G C * AE HIS-42 For S/G D d. Main feedwater chemical injection valves - CLOSED * AE HIS-43 For S/G A * AE HIS-44 For S/G B * AE HIS-45 For S/G C * AE HIS-46 For S/G D
	SRO, ATC, BOP	7. Verify Blowdown, Lower, And Upper Sampling Isolated On Faulted S/G(s): a. S/G Blowdown Containment Isolation Valves - CLOSED * BM HIS-1A For S/G A * BM HIS-2A For S/G B * BM HIS-3A For S/G C * BM HIS-4A For S/G D b. S/G Upper Sample Isolation Valves - CLOSED * BM HIS-19 For S/G A * BM HIS-20 For S/G B * BM HIS-21 For S/G C * BM HIS-22 For S/G D c. S/G Lower Sample Isolation Valves - CLOSED * BM HIS-35 For S/G A * BM HIS-36 For S/G B * BM HIS-37 For S/G C * BM HIS-38 For S/G D

Op-Test No.: _____	Scenario No.: <u>3</u>	Event No.: <u>5</u>	Page <u>32</u> of <u>35</u>
Event Description: <u>EMG E-2, FAULTED STEAM GENERATOR ISOLATION</u>			
Time	Position	Applicant's Actions or Behavior	
CAUTION If any PZR PORV opens because of high pressure, the PORV shall be monitored to ensure it recloses after pressure decreases to less than 2235 psig.			
	SRO, ATC	<u>8.</u> Check PZR PORVs And Block Valves: a. Power To Block Valves - AVAILABLE <ul style="list-style-type: none"> • BB HIS-8000A • BB HIS-8000B b. PZR PORVs - CLOSED <ul style="list-style-type: none"> • BB HIS-455A • BB HIS-456A c. RCS Pressure – LESS THAN 2185 PSIG	
	SRO, BOP	<u>9.</u> Check If Uncontrolled Cooldown Has Stopped: a. Check RCS Hot Leg Temperatures – STABLE OR INCREASING; If No, perform RNO 9.a. RNO a. WHEN uncontrolled RCS cooldown has stopped, THEN control steam flow and feed flow, as necessary, to maintain stable RCS hot leg temperatures. Observe cautions prior to step 10 and continue with step 10. b. Control steam flow and feed flow, as necessary, to maintain stable RCS hot leg temperatures. EXAMINER NOTE: Per <u>9. RNO a.</u> , When cooldown stopped, BOP uses the thumbwheel and ARV 'A' 'C' and 'D' setpoints are decreased to maintain current RCS Hot Leg temperatures stable or increasing.	
CAUTIONS <ul style="list-style-type: none"> • If steamlines in area 5 of Aux Bldg are not intact, extreme caution will be necessary when performing local surveys. • If offsite power is lost after SI reset, manual action may be required to restore safeguards equipment to the required configuration. 			

Op-Test No.: _____ Scenario No.: 3 Event No.: 5Page 33 of 35Event Description: EMG E-2, FAULTED STEAM GENERATOR ISOLATION

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	10. Determine Secondary Radiation Levels: a. Direct Health Physics to survey steamlines in area 5 of Aux Bldg. b. Check S/G Sampling - ISOLATED c. Ensure SI - RESET <ul style="list-style-type: none"> • SB HS-42A • SB HS-43A d. Ensure Temporary CCW Pump and Temporary CCW Chiller, as needed, are inservice per SYS EG-130, RADWASTE CCW SYSTEM OPERATION e. WHEN Temporary CCW Pump is inservice, THEN open all S/G sample isolation valves. <ul style="list-style-type: none"> • BM HIS-65 For S/G A • BM HIS-35 For S/G A • BM HIS-66 For S/G B • BM HIS-36 For S/G B • BM HIS-67 For S/G C • BM HIS-37 For S/G C • BM HIS-68 For S/G D • BM HIS-38 For S/G D f. Direct Chemistry to sample all S/Gs for activity.
Simulator Operator: When contacted as Health Physics, acknowledge area 5 survey request. If called as Radwaste Watch, respond that Temporary CCW Pump and Chiller are not in operation at this time (not modeled). Report that they will be placed into service per SYS EG-130, RADWASTE CCW SYSTEM OPERATION. When contacted as Chemistry, acknowledge Steam Generator sample request.		
NOTE: Locally opening EF HV-43, ESW A TO AI COMPRESSOR or EF HV-44, ESW B TO AIR COMPRESSOR requires the associated ESW Train to be declared inoperable. Local opening of the valve, on 2000' NORTH END AUX BLDG, will preclude it from automatically isolating on a high flow condition.		
	SRO, BOP	11. Verify Instrument Air Compressor Is Running: a. Ensure At Least One ESW TRN TO AIR COMPRESSOR Valve - OPEN <ul style="list-style-type: none"> * EF HIS-43 * EF HIS-44 b. Check AIR COMPRESSOR BRKR RESET Switch Associated With Open ESW Valve (s) – CLOSED; If No, Perform RNO <ul style="list-style-type: none"> * KA HIS-3C * KA HIS-2C

Op-Test No.: _____ Scenario No.: 3 Event No.: 5Page 34 of 35Event Description: EMG E-2, FAULTED STEAM GENERATOR ISOLATION

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	11. b. RNO b. Reset and close AIR COMPRESSOR BRKR RESET Switch * KA HIS-3C * KA HIS-2C
	SRO, ATC, BOP	11. cont. 11. c. Check INST AIR PRESS – GREATER THAN 105 PSIG • KA PI-40 d. Check Neither ESW TO AIR COMPRESSOR Valve – Locally Opened • EF HV-43 • EF HV-44 e. Check Both ESW TRN TO AIR COMPRESSOR Valves – OPEN; If No, Perform RNO • EF HIS-43 • EF HIS-44 11. e. RNO e. Open the ESW TRN TO AIR COMPRESSOR Valve that is closed * EF HIS-43 * EF HIS-44
	SRO, ATC, BOP	11. cont. 11. f. Check Both AIR COMPRESSOR BRKR RESET Switches – CLOSED; If No, Perform RNO • KA HIS-3C • KA HIS-2C 11. f. RNO f. Reset and close the open AIR COMPRESSOR BRKR RESET Switch. * KA HIS-3C * KA HIS-2C
	SRO, ATC, BOP	12. Check If S/G Tubes Are Intact: a. Condenser Air Discharge Radiation – NORMAL BEFORE ISOLATION • GEG 925 b. S/G Blowdown And Sample Radiation - NORMAL • BML 256 • SJL 026 • Sample Results c. Turbine driven Auxiliary Feedwater Pump Exhaust Radiation - NORMAL • FCT 381

Op-Test No.: _____ Scenario No.: 3 Event No.: 5Page 35 of 35Event Description: EMG E-2, FAULTED STEAM GENERATOR ISOLATION

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	Step 12 cont. 12. d. S/G Steamline Radiation – NORMAL <ul style="list-style-type: none"> • ABS 114 For S/G A • ABS 113 For S/G B • ABS 112 For S/G C • ABS 111 For S/G D e. S/G Narrow Range Levels- NO LEVEL INCREASING IN AN UNCONTROLLED MANNER
	SRO, ATC, BOP	<u>13.</u> Check If Containment Spray Should Be Stopped: a. Check Spray Pumps – ANY RUNNING; No, Perform RNO <u>13.</u> a. RNO a. Go to step 14.
	SRO, ATC, BOP	14. Check If ECCS Flow Should Be Reduced: a. RCS Subcooling – GREATER THAN 30°F [45°F] b. Secondary heat sink: <ul style="list-style-type: none"> * Total feed Flow To Intact S/Gs – GREATER THAN 270, 000 LBM/HR OR * Narrow Range Level In At Least One Intact S/G – GREATER THAN 6% [29%] c. RCS Pressure – STABLE OR INCREASING; If No, Perform RNO 14.c. RNO c. Go to step 15.
	SRO, ATC, BOP	Step 14 cont. 14. d. PZR Pressure – GREATER THAN 6% [33%]; If No, Perform RNO 14.d. RNO d. Go to step 15.
	SRO, ATC, BOP	Step 14 cont. 14. e. Go to EMG ES-03, SI TERMINATION, Step 1.
	SRO, ATC, BOP	15. Go To EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1
EXAMINER NOTE: Scenario termination criteria: Faulted Steam Generator 'B' is isolated, completion of all critical tasks or at Lead Examiner discretion.		
Simulator Operator: At direction of Lead Examiner, FREEZE simulator. Do not reset until directed from Lead Examiner. Collect any data needed.		

Op-Test No.: _____	Scenario No.: <u>4</u>	Event No.: <u>1</u>	Page <u>1</u> of <u>40</u>						
Event Description: <u>Pressurizer (PZR) level channel, BB PI-459, fails low.</u>									
Time	Position	Applicant's Actions or Behavior							
Simulator Operator: Insert Key 1 at Lead Examiner direction. Diagnostics: Meter PZR LEV BB LI-459A decreasing. Main Control Board (MCB) alarms 00-032B, PZR 17% HTRS OFF LTDN ISO and 00-032C, PZR LO LEV DEV and 00-032E, PZR HTR CTRL TROUBLE annunciate. PZR HTS B/U GROUP B and PZR HTR CTRL GROUP C trip. Letdown orifice isolation valves close.									
	SRO, ATC, BOP	Crew diagnoses failure.							
	SRO, ATC	Per AP 15C-003 step 6.1.7, the Operator should take manual control when components are not performing correctly. ATC places PZR LEV MASTER CTRL, BB LK-459, in manual.							
	SRO, ATC, BOP	Enter and Perform OFN SB-008, rev 35, INSTRUMENT MALFUNCTIONS SRO directs OFN SB-008, INSTRUMENT MALFUNCTIONS							
	SRO, ATC	1. Check for malfunction: * Check If Reactor Coolant System Instrument Channel Or Controller Is Malfunctioning: a. Perform appropriate attachment for malfunctioning channel or controller from table below: <table border="1" style="margin-left: 40px; width: 100%; border-collapse: collapse;"> <tr> <th style="width: 33%;">Variable</th> <th style="width: 33%;">Channels</th> <th style="width: 33%;">Attachment</th> </tr> <tr> <td>RCS Level (BB)</td> <td>L-459, L-460, L-461</td> <td>Attachment J</td> </tr> </table>		Variable	Channels	Attachment	RCS Level (BB)	L-459, L-460, L-461	Attachment J
Variable	Channels	Attachment							
RCS Level (BB)	L-459, L-460, L-461	Attachment J							
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status.									
	SRO, ATC	J1. Identify Failed Instrument Channel: a. Compare pressurizer level indications to confirm a pressurizer level channel failure: <ul style="list-style-type: none"> • BB LI-459A • BB LI-460A • BB LI-461 							

Op-Test No.: _____ Scenario No.: 4 Event No.: 1Page 2 of 40Event Description: Pressurizer (PZR) level channel, BB PI-459, fails low.

Time	Position	Applicant's Actions or Behavior
	SRO, ATC	<p>J2. Ensure Alternate Pressurizer Level Channel On PZR LEV CTRL SEL Switch Is Selected.</p> <ul style="list-style-type: none"> • BB LI-459D <p>EXAMINER NOTE: ATC selects L460 or L461 for control.</p>
	SRO, ATC	J3. Check Failed Pressurizer Level Channel Failed Low
NOTE: Letdown flow is isolated and pressurizer control heaters are deenergized if the controlling level falls below 17%. Both must be manually realigned once level control is re-established.		
	SRO, ATC	<p>J4. Check Letdown Flow – ESTABLISHED; No, Perform RNO.</p> <p>J4 RNO Reestablish letdown flow, as follows:</p> <ol style="list-style-type: none"> Open LTDN SYS CTMT ISO VLVs. <ul style="list-style-type: none"> • BG HV-8152 • BG HV-8160 Open RCS LTDN TO REGEN HX Valves. <ul style="list-style-type: none"> • BG HIS-459 • BG HIS-460 Place LTDN HX OUTLET PRESS CTRL in manual and full open. <ul style="list-style-type: none"> • B PK-131 Open LTDN ORIFIC VLVs, as necessary, to establish desired letdown flow. <ul style="list-style-type: none"> * BG HIS-8149AA * BG HIS-8149BA * BG HIS-8149CA <p>EXAMINER NOTE: At a minimum, a 75-gpm orifice is opened, e.g. BG HIS-8149AA or BG HIS-8149BA. Since 120 gpm letdown at start of scenario, the CRS directs 120 gpm letdown restored.</p> <ol style="list-style-type: none"> Adjust LTDN HX OUTLET PRESS CTRL, to maintain between 300 psig and 350 psig and place in automatic. <ul style="list-style-type: none"> • BG PK-131

Op-Test No.: _____ Scenario No.: 4 Event No.: 1Page 3 of 40Event Description: Pressurizer (PZR) level channel, BB PI-459, fails low.

Time	Position	Applicant's Actions or Behavior
NOTE: Refer to FIGURE 3 for PZR level control band.		
	SRO, ATC	J5. Manually Control Charging And Letdown To Stabilize Pressurizer Level At Level Appropriate For Plant Power.
	SRO, ATC	J6. Ensure Pressurizer Control Heaters - ON
	SRO, ATC	J7. Place Charging/Letdown Flow Control In Automatic
	SRO, ATC	J8. Monitor Pressurizer Level Response To Ensure Proper Control
	SRO, ATC	J9. Check Failed PZR Level Channel – NOT USED FOR RECORDER; If NO, Perform RNO J9. RNO Select alternate pressurizer level channel as input to recorder. EXAMINER NOTE: At PZR LEV RECORDER SEL, BB LS-459E, either L460 or L461 is selected.
	SRO	J10. Monitor The Following Technical Specification LCOs And Comply With Action Statements, As Appropriate <ul style="list-style-type: none"> 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Table 3.3.1-1, Function 9 3.3.4, REMOTE SHUTDOWN INSTRUMENTATION, Table 3.3.4-1, Function 12 3.3.3, ACCIDENT MONITORING INSTRUMENTATION, Table 3.3.3-1, Function 11 SRO identifies: <ul style="list-style-type: none"> 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, Condition A (Immediately entered due to failure) and from Table 3.3.1-1, Fu 9, Condition M (72 hours to trip bistables) is identified.
Event termination: Instrument failure identified; SRO identified applicable Technical Specifications or at Lead Examiner Discretion.		
Simulator Operator: Insert Key 2 at direction of Lead Examiner.		

Op-Test No.: _____	Scenario No.: <u>4</u>	Event No.: <u>2</u>	Page <u>4</u> of <u>40</u>
Event Description: <u>Steam Generator 'B' feed flow controlling channel, AE FT-520, fails high.</u>			
Time	Position	Applicant's Actions or Behavior	
Simulator Operator: Insert Key 2 at direction of Lead Examiner.			
Diagnostics: STEAM GENERATOR B FW FLOW meter AE FI-521A high. MCB alarms 00-109C SG B FLOW MISMATCH, 00-109B, SG B LEV DEV annunciate.			
	SRO, ATC, BOP	Crew diagnoses failure. BOP performs Memory Actions of either ALR 00-109C SG B FLOW MISMATCH; 00-109B, SG B LEV DEV; or OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment E, FEEDWATER FLW CHANNEL MALFUNCTION.	
	BOP	(SRO direction/Memory Action) Places SG B MFW REG VLV CTRL, AE FK-520, in Manual and depresses UP ARROW pushbutton, matching steam flow and feed flow. PCT: BOP takes manual control using AE FK-520, adjusts and matches steam and feed flow. EXAMINER NOTE: Without Operator action, a SG LEV LOLO RX TRIP occurs. (23.5% NR level, 2/4 on 1/4 SGs)	
	SRO, ATC, BOP	Enter and Perform ALR 00-109C, rev 10A, SG B FLOW MISMATCH; or ALR 00-109B, rev 9, SG B LEV DEV. SRO directs the ALR.	
EXAMINER NOTE: ALR 109C and 109B are very similar. As 109B is the higher tier ALR, only 109B is presented.			
NOTE: Steps 1 through 3 are Memory Action steps.			
	SRO, BOP, ATC	1. Check Steam Generator A Controlling Level Channel: * 5% GREATER THAN PROGRAM LEVEL OR * 5% LESS THAN PROGRAM LEVEL	

Op-Test No.: _____ Scenario No.: 4 Event No.: 2Page 5 of 40Event Description: Steam Generator 'B' feed flow controlling channel, AE FT-520, fails high.

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	2. Check Instruments – OPERATING PROPERLY <ul style="list-style-type: none"> • Steam Generator B Controlling Level Channel – WITHIN 6% OF REMAINING S/G B NARROW RANGE LEVEL CHANNELS <ul style="list-style-type: none"> * AE LI-529 * AE LI-552 • Steam Generator B Controlling Steam Pressure Channel – WITHIN 80 PSIG OF REMAINING CHANNELS <ul style="list-style-type: none"> * AB PI-524A * AB PI-525A • Steam Generator B Controlling Feedwater Flow Channel – WITHIN 0.2 MPPH OF OTHER CHANNEL; No, Perform RNO • Steam Generator B Controlling Steam Flow Channel – WITHIN 0.2 MPPH OF OTHER CHANNEL
	SRO, BOP	2. RNO Perform the following: <ol style="list-style-type: none"> Place Feedwater Reg Valve or Feedwater Reg Bypass Control Valve in manual. <ul style="list-style-type: none"> * AE FK-520 * AE LK-560 Adjust Feedwater Reg Valve or Feedwater Reg Bypass Control Valve, as necessary, to establish Steam Generator level at program value. <ul style="list-style-type: none"> * AE FK-520 * AE LK-560 <p>PCT: BOP takes manual control using AE FK-510, adjusts and matches steam and feed flow (UP ARROW).</p> <p>EXAMINER NOTE: Without Operator action, a SG LEV LOLO RX TRIP occurs. (23.5% NR level, 2/4 on 1/4 SGs)</p>
	SRO, BOP	2. RNO c. Go to OFN SB-008, INSTRUMENT MALFUNCTIONS, step 1.
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status.		
EXAMINER NOTE: The crew may enter OFN SB-008, INSTRUMENT MALFUNCTIONS, directly.		

Op-Test No.: _____ Scenario No.: 4 Event No.: 2Page 6 of 40Event Description: Steam Generator 'B' feed flow controlling channel, AE FT-520, fails high.

Time	Position	Applicant's Actions or Behavior						
	SRO, ATC, BOP	Enter and Perform OFN SB-008, rev 35, INSTRUMENT MALFUNCTIONS SRO directs OFN SB-008, INSTRUMENT MALFUNCTION						
		CAUTION: Feedwater flow is an input to the thermal power program. A failed feedwater flow channel could cause the thermal program to be inaccurate.						
		NOTE: Steps E1 through E2 are Memory Action steps.						
	SRO, ATC, BOP	1. Check For Malfunction: <ul style="list-style-type: none"> * Check If Secondary System Instrument Channel Is Malfunctioning: a. Perform appropriate attachment for malfunctioning channel from table below <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>VARIABLE</th><th>CHANNELS</th><th>ATTACHMENT</th></tr> </thead> <tbody> <tr> <td>Feedwater Flow (AE)</td><td>F-510, F-511, F-520 F-521, F-530, F-531 F-540, F-541</td><td>ATTACHMENT E</td></tr> </tbody> </table>	VARIABLE	CHANNELS	ATTACHMENT	Feedwater Flow (AE)	F-510, F-511, F-520 F-521, F-530, F-531 F-540, F-541	ATTACHMENT E
VARIABLE	CHANNELS	ATTACHMENT						
Feedwater Flow (AE)	F-510, F-511, F-520 F-521, F-530, F-531 F-540, F-541	ATTACHMENT E						
	SRO, ATC, BOP	E1. Identify Failed Instrument Channel: <ul style="list-style-type: none"> a. Compare feedwater flow indications to confirm feedwater flow channel failure: <ul style="list-style-type: none"> * AE FI-510A * AE FI-511A * AE FI-520A * AE FI-521A * AE FI-530A * AE FI-531A * AE FI-540A * AE FI-541A 						
	SRO, BOP	E2. Check Failed Feedwater Flow Channel Selected On SG FW FLOW CHANNEL SEL Switch: <ul style="list-style-type: none"> * AE FS-510C * AE FS-520C * AE FS-530C * AE FS-540C 						

Op-Test No.: _____ Scenario No.: 4 Event No.: 2Page 7 of 40Event Description: Steam Generator 'B' feed flow controlling channel, AE FT-520, fails high.

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	<p>E3. Check Main Feed Reg Valves In Control:</p> <p>a. Place Affected SG MFW REG VLV CTRL – IN MANUAL</p> <ul style="list-style-type: none"> * AE FK-510 * AE FK-520 * AE FK-530 * AE FK-540 <p>b. Adjust affected S/G MFW REG VLV CTRL, as necessary, to establish Steam generator level at program:</p> <ul style="list-style-type: none"> * AE FK-510 * AE FK-520 * AE FK-530 * AE FK-540 <p>PCT: BOP takes manual control using AE FK-510, adjusts and matches steam and feed flow (UP ARROW).</p> <p>EXAMINER NOTE: Without Operator action, a SG LEV LOLO RX TRIP occurs. (23.5% NR level, 2/4 on 1/4 SGs)</p>
	SRO, BOP	<p>E4. Select Alternate Feedwater Flow Channel On SG FW FLOW CHANNEL SEL Switch:</p> <ul style="list-style-type: none"> * AE FS-510C * AE FS-520C * AE FS-530C * AE FS-540C <p>EXAMINER NOTE: Alternate channel F521 selected. MCB alarm 109C clears when alternate channel selected.</p>
NOTE: Feedwater flow is required to perform daily secondary calorimetrics above 15% of rated thermal power.		
	SRO	E6. Check S/G feedwater Flow Channel Failure – REPAIRED OR ALTERNATE CHANNEL SELECTED
	SRO, BOP	<p>Restore Affected S/G MFW REG VLV CTRL To – AUTO</p> <p>EXAMINER NOTE: AUTO pushbutton depressed, restoring AE FK-520 to automatic control. MCB alarm 109B clears when level within program band (45% -55%).</p>

[illegible]

Op-Test No.: _____	Scenario No.: <u>4</u>	Event No.: <u>3</u>	Page <u>9</u> of <u>40</u>
Event Description: <u>Service Water Pump 'A' trip.</u>			
Time	Position	Applicant's Actions or Behavior	
Simulator Operator: Insert Key 3 at direction of Lead Examiner.			
Diagnostics: SERVICE WTR PUMP IHS0IPA, IHS-WS001A, trips. SERVICE WTR PUMP 1WS01PB AMPS 1II-WS002 at zero. Main Control Board alarms 00-008B, SERV WTR PRESS HI LO and 00-009B, SERV WTR PMP TRIP, annunciate.			
	SRO, ATC, BOP	Crew diagnoses component failure. Crew enters ALR 00-009B, rev 8, SERV WTR PMP TRIP. SRO directs ALR 00-009B, SERV WTR PMP TRIP.	
	SRO, ATC	1. Determine Affected Service Water Pump: a. Check Service Water Pumps – AT LEAST ONE TRIPPED * 1HS-WS001A For Pump A * 1HS-WS002A For Pump B * 1HS-WS003A For Pump C * 1HS-WS004A For Low Flow Pump	
	SRO, ATC	2. Check Liquid Waste Release Using Service Water System For Dilution Flow – NOT IN SERVICE	
	SRO, ATC	3. Start Standby Service Water Pumps, As Necessary, To Establish Discharge Pressure Greater Than 85 PSIG. • 1HS-WS001A For Pump A • 1HS-WS002A For Pump B • 1HS-WS003A For Pump C • 1HS-WS004A For Low Flow Pump	
	SRO, ATC	Direct start of 'B' Service Water Pump. EXAMINER NOTE: Alarm 00-008B clears when pump started.	
	SRO	4. Notify Electrical Maintenance To Determine And Correct Cause Of Service Water Pump Trip.	
Simulator Operator: If contacted as Site Watch to investigate SWP 'A' trip, acknowledge request.			

[illegible]

Op-Test No.: _____	Scenario No.: <u>4</u>	Event No.: <u>4</u>	Page <u>11</u> of <u>40</u>
Event Description: <u>Steam Generator 'C' controlling pressure channel, AB PI-535A, fails high.</u>			
Time	Position	Applicant's Actions or Behavior	
Simulator Operator: Insert Key 4 at direction of Lead Examiner. Diagnostics: SG C PRESS meter, AB PI-535A, increasing; Main Control Board alarms 00-110C, SG C FLOW MISMATCH and 00-110B, SG C LEV DEV, annunciate.			
	SRO, ATC, BOP	Crew diagnoses instrument failure. BOP performs Memory Actions of either ALR 00-110C, SG C FLOW MISMATCH; 00-110B, SG C LEV DEV; or OFN SB-008, INSTRUMENT MALFUNCTIONS, Attachment C, SG PRESSURE CHANNEL MALFUNCTION.	
	BOP	(SRO direction/Memory Action) Places SG C MFW REG VLV CTRL, AE FK-530, in Manual and depresses DOWN ARROW pushbutton, matching steam flow and feed flow.	
	SRO, ATC, BOP	Enter and Perform ALR 00-110C, rev 10A, SG A FLOW MISMATCH; or ALR 00-110B, rev 9, SG A LEV DEV. SRO directs the ALR.	
EXAMINER NOTE: ALR 110C and 110B are very similar. As 110B is the higher tier ALR, only 110B is presented.			
NOTE: Steps 1 through 3 are Memory Action steps.			
	SRO, ATC, BOP	1. Check Steam Generator C Controlling Level Channel: * 5% GREATER THAN PROGRAM LEVEL OR * 5% LESS THAN PROGRAM LEVEL	
	SRO, ATC, BOP	2. Check Instruments – OPERATING PROPERLY; If No, Perform RNO <ul style="list-style-type: none"> • Steam Generator C Controlling Level Channel – WITHIN 6% OF REMAINING S/G A NARROW RANGE LEVEL CHANNELS <ul style="list-style-type: none"> * AE LI-539 * AE LI-553 • Steam Generator C Controlling Steam Pressure Channel – WITHIN 100 PSIG OF REMAINING CHANNELS; No, Perform RNO <ul style="list-style-type: none"> * AB PI-534A * AB PI-535A 	

Op-Test No.: _____ Scenario No.: 4 Event No.: 4Page 12 of 40Event Description: Steam Generator 'C' controlling pressure channel, AB PI-535A, fails high.

Time	Position	Applicant's Actions or Behavior						
	SRO, BOP	2. RNO Perform the following: a. Place Feedwater Reg Valve or Feedwater Reg Bypass Control Valve in manual. * AE FK-530 * AE LK-570						
	SRO, BOP	2. RNO b. Adjust Feedwater Reg Valve or Feedwater Reg Bypass Control Valve, as necessary, to establish Steam Generator level at program value. * AE FK-530 * AE LK-570 EXAMINER NOTE: BOP takes manual control using AE FK-530, adjusts and matches steam and feed flow (depressing the DOWN ARROW pushbutton).						
	SRO, BOP	2. RNO c. Go to OFN SB-008, INSTRUMENT MALFUNCTIONS, step 1.						
Simulator Operator: If contacted as WWM, acknowledge requests. If contacted as Call Supt., acknowledge status.								
EXAMINER NOTE: The crew may enter OFN SB-008, INSTRUMENT MALFUNCTIONS, directly. If Attachment A is entered due to failure, it will direct the SRO to Attachment C.								
	SRO, ATC, BOP	Enter and Perform OFN SB-008, INSTRUMENT MALFUNCTIONS SRO directs OFN SB-008, INSTRUMENT MALFUNCTIONS						
	SRO, ATC, BOP	1. Check For Malfunction: * Check If Secondary System Instrument Channel Is Malfunctioning: a. Perform appropriate attachment for malfunctioning channel from table below <table border="1"> <thead> <tr> <th>VARIABLE</th><th>CHANNEL</th><th>ATTACHMENT</th></tr> </thead> <tbody> <tr> <td>S/G Pressure (AB)</td><td>P-514, P-515, P-516 P-524, P-525, P-526 P-534, P-535, P-536 P-544, P-545, P-546</td><td>ATTACHMENT C</td></tr> </tbody> </table>	VARIABLE	CHANNEL	ATTACHMENT	S/G Pressure (AB)	P-514, P-515, P-516 P-524, P-525, P-526 P-534, P-535, P-536 P-544, P-545, P-546	ATTACHMENT C
VARIABLE	CHANNEL	ATTACHMENT						
S/G Pressure (AB)	P-514, P-515, P-516 P-524, P-525, P-526 P-534, P-535, P-536 P-544, P-545, P-546	ATTACHMENT C						

Op-Test No.: _____ Scenario No.: 4 Event No.: 4Page 13 of 40Event Description: Steam Generator 'C' controlling pressure channel, AB PI-535A, fails high.

Time	Position	Applicant's Actions or Behavior						
<p>CAUTION: SG steam pressure is an input to the thermal power program. A failed steam pressure channel could cause the thermal power program to be inaccurate.</p> <p>NOTES:</p> <ul style="list-style-type: none"> Steps C1 through C3 are Memory Action steps. A steam flow channel compensated by failed pressure channel will affect Main Feed pump speed until the failed channel is selected out. 								
<p>EXAMINER NOTE: During Operator validation of 5-8-13, the SRO directed the RO to monitor NI's for reactor power as both the steam flow and feed flow calorimetrics are suspect due to the instrument failures. Recall Event 2: Feed flow AE FT-520 failed high and now, Event 4, AB PI-535A pressure channel has failed high.</p>								
	SRO, ATC, BOP	<p>C1. Identify Failed Instrument Channel:</p> <ul style="list-style-type: none"> Compare S/G Pressure Indications To Confirm S/G Pressure Channel Failure: <ul style="list-style-type: none"> AB PI-514A For S/G A AB PI-515A For S/G A AB PI-516A For S/G A AB PI-524A For S/G B AB PI-525A For S/G B AB PI-526A For S/G B AB PI-534A For S/G C AB PI-535A For S/G C AB PI-536A For S/G C 						
	SRO, BOP	<p>C2. Check If Failed S/G Pressure Channel Used For Feedwater Control:</p> <p>a. Identify steam flow channel compensated by failed pressure channel from table below:</p> <table border="1"> <thead> <tr> <th>S/G</th> <th>STEAM PRESSURE CHANNEL</th> <th>ASSOCIATED STEAM FLOW CHANNEL</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>P-534 P-535</td> <td>F-532 F-533</td> </tr> </tbody> </table>	S/G	STEAM PRESSURE CHANNEL	ASSOCIATED STEAM FLOW CHANNEL	C	P-534 P-535	F-532 F-533
S/G	STEAM PRESSURE CHANNEL	ASSOCIATED STEAM FLOW CHANNEL						
C	P-534 P-535	F-532 F-533						

Op-Test No.: _____ Scenario No.: 4 Event No.: 4Page 14 of 40Event Description: Steam Generator 'C' controlling pressure channel, AB PI-535A, fails high.

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	<p>C2. b. Check steam flow channel associated with failed steam pressure channel selected on SG STEAM FLOW CHANNEL SEL Switch.</p> <p>EXAMINER NOTE: Selector switch AB FS-532C has F-533 selected. P-535 corresponds to F-533.</p>
	SRO, BOP	<p>C3. Check Main Feed Reg Valves In Control:</p> <p>a. Place Affected SG MFW REG VLV CTRL – IN MANUAL</p> <p>* AE FK-530</p> <p>b. Adjust affected S/G MFW REG VLV CTRL, as necessary, Steam Generator level at program:</p> <p>* AE FK-530</p> <p>EXAMINER NOTE: BOP takes manual control using AE FK-530, adjusts and matches steam and feed flow (depressing the DOWN ARROW pushbutton).</p>
	SRO, BOP	<p>C4. Select Alternate Steam Flow Channel On SG STEAM FLOW CHANNEL SEL Switch:</p> <ul style="list-style-type: none"> • AB FS-512C • AB FS-522C • AB FS-532C <p>EXAMINER NOTE: Channel F532 selected as the alternate channel on switch AB FS-532C. Alarm 00-110C clears when alternate channel selected.</p>
	SRO, BOP	<p>C5. Restore Affected SG MFW REG VLV CTRL To – AUTO</p> <p>EXAMINER NOTE: AUTO pushbutton depressed, restoring AE FK-530 to automatic control. MCB alarm 110B clears upon restoration of SG level to program band (45% - 55%).</p>
	SRO	<p>C6. Monitor The Following Technical Specifications LCOs And Comply With Action Statements, As Appropriate:</p> <ul style="list-style-type: none"> • 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION, Table 3.3.2-1, Functions 1.e And 4.e • 3.3.4, REMOTE SHUTDOWN INSTRUMENTATION, Table 3.3.4-1, Function 7 • 3.3.3, POST ACCIDENT MONITORING INSTRUMENTATION, Table 3.3.3-1, Function 8 • 3.3.6, CONTAINMENT PURGE ISOLATION INSTRUMENTATION • 3.3.7, CONTROL ROOM EMERGENCY VENTILATION SYSTEM ACTUATION INSTRUMENTATION

[illegible]

Op-Test No.: _____	Scenario No.: <u>4</u>	Event No.: <u>5</u>	Page <u>16</u> of <u>40</u>
Event Description: <u>Reactivity Event: Common cause failure for MDAFW 'A' and MDAFW 'B'.</u> <u>TS 3.7.5 Condition C required shutdown.</u>			
<u>OFN MA-038, RAPID PLANT SHUTDOWN</u>			
Time	Position	Applicant's Actions or Behavior	
EXAMINER NOTE & Simulator Operator NOTE: Event 5 is a reactivity event. Provide Cue for Reactivity Downpower evolution at Lead Examiner direction.			
Simulator Operator: As Shift Manager: Call as Shift Manager to inform the Control Room Supervisor that Motor Driven Auxiliary Feedwater Pump 'B' has been declared INOPERABLE but AVAILABLE.			
	SRO	Technical Specification 3.7.5, Condition C (Two AFW trains inoperable) identified: C.1 Be in MODE 3 in 6 hours and in MODE 4 in 12 hours.	
Simulator Operator Cue If Needed: Shift Manager: Use OFN MA-038, RAPID PLANT SHUTDOWN at rate 1% per minute, using MW method.			
Simulator Operator Cue If Needed: SYS OPS: Acknowledge plant status – downpower commencing.			
	SRO, ATC, BOP	Enter and perform OFN MA-038, rev 18A, RAPID DOWNPOWER SRO directs OFN MA-038, RAPID DOWNPOWER	
EXAMINER NOTE: SRO may direct RO to borate per 10% down power pre-shift brief.			
CAUTION: Fast unloading rates may result in increased turbine vibration.			
NOTES: <ul style="list-style-type: none"> Foldout page shall be monitored throughout this procedure. Steps 4 and 5 may be performed concurrently with steps 1 through 3. Load reduction at greater than 65 MW (5%)/minute will arm condenser steam dumps. 			
FOLDOUT PAGE CRITERIA			
1. REACTOR TRIP CRITERIA: At any time during the rapid power reduction, the SM/CRS?RO may decide to initiate a manual reactor trip. This decision should be based on the following: <ul style="list-style-type: none"> Plant stability during the power reduction Time frame requirements of the shutdown IF a reactor trip occurs while performing this procedure, THEN go to EMG E-0, REACTOR TRIP OR SAFETY INJECTION			
2. TAVG CONTROL REQUIRMENTS: (ρ) During rapid power reduction, attempt to maintain a target Tav _g /T _{ref} temperature error between 0°F and +5°F, by adjusting control rods in automatic or manual.			

Op-Test No.: _____ Scenario No.: 4 Event No.: 5Page 17 of 40Event Description: Reactivity – downpower.OFN MA-038, RAPID PLANT SHUTDOWN

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	1. Determine Turbine Unloading Method To Be Used a. Check Desired Unloading Rate – LESS THAN OR EQUAL TO 65 MW/MINUTE (5%) b. Check Automatic Turbine Unloading Desired. c. From Graphic 5551, TURBINE CONTROL SYSTEM – OPERATIONS PANEL, LOAD CONTROL section – Select method of Load Control as directed by CRS/SM * First Stage Pressure OR * Megawatts OR * Open Loop/Vlv Mgmt
	SRO, BOP	2. (ρ) Reduce Turbine Load In Automatic: a. From Graphic 5551, TURBINE CONTROL SYSTEM – OPERATION PANEL, SETPOINTS section – Reduce Turbine Load 1) Select CHANGE. 2) Enter TARGET MW and select ENTER. 3) Enter RATE – DEC and select ENTER. 4) Select GO. b. Maintain desired turbine unloading rate. c. Go to Step 4.
	SRO, ATC	4. (ρ) Borate RCS And Adjust Control Rods, As Necessary, To Maintain The Following: • Target Tavg/Tref Temperature Error Between 0°F and +5°F • Control Rods Above The Rod Insertion Limits
	SRO, ATC	5. Energize PZR Backup Heaters. • BB HIS-51A • BB HIS-52A
	SRO, ATC, BOP	6. Check PZR PORVs: a. RCS Pressure – LESS THAN 2335 PSIG

Op-Test No.: _____ Scenario No.: 4 Event No.: 5Page 18 of 40Event Description: Reactivity – downpower.OFN MA-038, RAPID PLANT SHUTDOWN

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	Step 6 cont. b. PZR PORVs - CLOSED <ul style="list-style-type: none"> • BB HIS-455A • BB HIS-456A c. RCS Pressure – GREATER THAN 2185 PSIG d. PORV Block Valves- OPEN <ul style="list-style-type: none"> • BB HIS-8000A • BB HIS-8000B
	SRO, ATC	7. Check PZR Pressure – STABLE AT OR TRENDING TO 2235 PSIG
	SRO, ATC	8. Check PZR Level – STABLE AT OR TRENDING TO PROGRAM LEVEL
	SRO, BOP	9. Check S/G Levels – CONTROLLING BETWEEN 45% AND 55%
	SRO	10. Notify Health Physics To Perform The Following: <ul style="list-style-type: none"> • Monitor RCS and other connecting systems for increasing Radiation levels due to unplanned crud burst. • Notify all personnel in the affected areas.
Simulator Operator: When Health Physics is called, acknowledge request.		
	SRO	11. Check If Sampling Is Required: a. Check if one of the following conditions is met: <ul style="list-style-type: none"> * Thermal Power Change – GREATER THAN 15% IN 1 HOUR * Mode Change from 2 To 3 b. Direct Chemistry to take samples per AP 02-007, ABNORMAL CONDITIONS GUIDELINES
Simulator Operator: When Chemistry is called, acknowledge request.		

[illegible]

Op-Test No.: _____	Scenario No.: <u>4</u>	Event No.: <u>6</u>	Page <u>20</u> of <u>40</u>
Event Description: <u>Major: 600 gpm LOCA – Cold Leg Loop ‘C’</u>			
<u>OFN BB-007, RCS LEAKAGE HIGH</u>			
Time	Position	Applicant's Actions or Behavior	
<p>LEAD EXAMINER NOTE: After downpower initiated and when desired, direct Simulator Operator to insert Key 6, 600 gpm LOCA – Cold Leg Loop ‘C’ (ramped in over 3 minutes).</p> <p>Simulator Operator: Insert Key 6 for the LOCA at the direction of the Lead Examiner.</p> <p>Diagnostics: RCS/PZR pressure decreasing, PZR level decreasing, RCS temperature decreasing, Containment humidity increasing, DNB pressure (2220 psig) TS entry.</p>			
EXAMINER NOTE: During 5-8-13 Operations validation, Crew stopped the downpower in order to make confirmatory diagnostics. Crew entered OFN BB-007, RCS LEAKAGE HIGH. Crew used FOLDOUT PAGE criteria, unable to maintain Pressurizer pressure to actuate Reactor Trip and Safety Injection.			
	SRO, ATC, BOP	<p>Crew diagnoses Primary Loss of Coolant. Crew enters OFN BB-007, rev 14B, RCS LEAKAGE HIGH.</p> <p>SRO directs OFN BB-007, RCS LEAKAGE HIGH.</p>	
<p>CAUTIONS</p> <ul style="list-style-type: none"> • If safety injection actuates during this procedure, go to EMG E-0, REACTOR TIP OR SAFETY INJECTION, step 1. • If the reactor is tripped manually or automatically, stabilize the plant using EMGs while continuing with this procedure. <p>NOTE Foldout page shall be monitored throughout this procedure.</p>			

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 21 of 40Event Description: Major: 600 gpm LOCA – Cold Leg Loop ‘C’OFN BB-007, RCS LEAKAGE HIGH

Time	Position	Applicant's Actions or Behavior
FOLDOUT PAGE CRITERIA		
<p>1. SI ACTUATION CRITERIA IF any condition listed occurs, THEN trip the reactor, actuate SI, and go to EMG E-0, REACTOR TRIP OR SAFETY INJECTION, step 1.</p> <ul style="list-style-type: none"> * Both the following conditions exist: <ul style="list-style-type: none"> • Reactor is tripped AND • RCS Subcooling Based On Subcooling Monitor – LESS THAN 30°F OR * Pressurizer Pressure – CANNOT BE MAINTAINED OR * Pressurizer Level – CANNOT BE MAINTAINED GREATER THAN 6% OR * All of the following conditions exist: <ul style="list-style-type: none"> • Normal charging is maximized from one pump AND • Letdown is isolated AND • Pressurizer level is decreasing 		
2. LETDOWN ISOLATION CRITERIA		
3. REACTOR TRIP CRITERIA		
	SRO, ATC	1. Check Plant In Mode 1, 2, Or 3 With Accumulator Outlet Valves Open
	SRO, ATC	2. Check PZR Level – GREATER THAN 6%
	SRO, ATC	3. Check PZR Level – GREATER THAN 17%
	SRO, ATC	4. Check PZR Level – STABLE OR INCREASING; No, Perform RNO
		4. RNO IF PZR level is less than program level, THEN perform the following:
	SRO, ATC	4 RNO a. Establish maximum required charging flow from one charging pump.
		EXAMINER NOTE: ATC places NORMAL CHARGING PMP FLOW CTRL, BG FK-462, in MANUAL and depresses UP ARROW pushbutton.

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 22 of 40Event Description: Major: 600 gpm LOCA – Cold Leg Loop ‘C’OFN BB-007, RCS LEAKAGE HIGH, EMG E-0, REACTOR TRIP OR SAFETY INJECTION

Time	Position	Applicant's Actions or Behavior
	SRO, ATC	4. RNO b. IF pressurizer level can NOT be maintained, THEN perform the following: 1. Close Letdown Orifice Isolation Valves to establish stable PZR level. <ul style="list-style-type: none"> • BG HIS-8149AA • BG HIS-8149BA • BG HIS-8146CA 2. Close RCS Letdown T Regen Hx isolation valves. <ul style="list-style-type: none"> • BG HIS-459 • BG HIS-460
EXAMINER NOTE: Using the foldout page criteria (SI ACTUATION CRITERIA): (1) Unable to maintain Pressurizer pressure or (2) All of the following conditions exist: Normal charging maximized, letdown isolated and Pressurizer level decreasing, the SRO directs ATC to trip the reactor and actuate Safety Injection.		
	ATC	Manipulates REACTOR TRIP MAN ACTUATION, SB HS-1, to TRIP position.
	ATC	Rotates J-handles for SB HS-27 and SB HS-28, SI MAN ACTUATION, to ACTUATE position.
	SRO, ATC, BOP	Directs entry into EMG E-0, REACTOR TRIP OR SAFETY INJECTION Perform Immediate Actions of EMG E-0, REACTOR TRIP OR SAFETY INJECTION
EXAMINER NOTE: While the ATC and BOP are required to know all Immediate Action steps, the ATC performs Immediate Action steps 1, 3, and 4 whereas the BOP performs Immediate Action step 2. Immediate Action steps are performed prior to the reading aloud of EMG E-0, REACTOR TRIP OR SAFETY INJECTION.		
CAUTION: Accident conditions can cause higher than normal radiation levels. Health Physics monitoring may be required while performing local operator actions.		
NOTES: <ul style="list-style-type: none"> • Steps 1 through 4 are immediate action steps. • Foldout page shall be monitored throughout this procedure. 		

Op-Test No.: _____	Scenario No.: <u>4</u>	Event No.: <u>7</u>	Page <u>23</u> of <u>40</u>
Event Description: Critical Task: Establish 270, 000 lbm/hr Auxiliary Feedwater (AFW) flow before completion of Attachment F of EMG E-0. Necessary to meet total 270, 000 lbm/hr AFW flow to steam generators. EMG E-0, rev 31, REACTOR TRIP OR SAFETY INJECTION			
Time	Position	Applicant's Actions or Behavior	
FOLDOUT PAGE CRITERIA			
1. RCP TRIP CRITERIA 2. SI ACTUATION CRITERIA 3. FAULTED S/G ISOLATION CRITERIA 4. RUPTURED S/G ISOLATION CRITERIA 5. COLD LEG RECIRCULATION CRITERIA 6. AFW SUPPLY SWITCHOVER CRITERIA 7. RCS TEMPERATURE CONTROL <ul style="list-style-type: none"> * IF a Loss-Of-Offsite Power has occurred, THEN close MSIVs. <ul style="list-style-type: none"> * AB HS-79 * AB HS-80 * IF no RCPs are running AND off-site power is available, THEN select STM PRESS mode on the steam dumps. <ul style="list-style-type: none"> • AB US-500Z. * IF RCS C/L temperature is less than 557°F AND decreasing, THEN control total feed flow to limit RCS cooldown. * Maintain total feed flow greater than 270, 000 lbm/hr until narrow range is greater than 6% [29%] in at least one S/G 			
EXAMINER NOTE: MDAFW 'B' will autostart. TDAFW pump will not autostart (manual start available). Total AFW flow to the steam generators is <270, 000 lbm/hr. The TDAFW must be started.			
	SRO, BOP	Once BOP Immediate Actions are complete, BOP starts TDAFW pump. <ul style="list-style-type: none"> * Depress OPEN pushbutton for LOOP 3 STEAM TO AFP TURB, AB HIS-6A * Depress OPEN pushbutton for LOOP 2 STEAM TO AFP TURB, AB HIS-5A • Depress OPEN pushbutton for AFP TURB MECH TRIP/THROT VLV, FC HIS-312A CT: Establish 270, 000 lbm/hr Auxiliary Feedwater (AFW) flow before completion of Attachment F of EMG E-0. TDAFW autostart failure; manual start available. EXAMINER NOTE: BOP accomplishes this per AP 15C-003 step 6.1.7, the Operator should take manual control when components are not performing correctly OR EMG E-0 step 8 RNO b, OR Attachment F, step F4 RNO b.	

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 24 of 40Event Description: Major: 600 gpm LOCA – Cold Leg Loop ‘C’EMG E-0, REACTOR TRIP OR SAFETY INJECTION

Time	Position	Applicant's Actions or Behavior
EXAMINER NOTE: When Immediate actions complete, BOP, per Foldout Page Criteria #7, RCS TEMPERATURE CONTROL, throttles AFW to S/Gs to limit the cooldown.		
	SRO, ATC	1. Verify Reactor Trip: a. Check all rod bottom lights – LIT b. Check reactor trip breakers and bypass breakers - OPEN <ul style="list-style-type: none"> • SB ZL-1 • SB ZL-2 • SB ZL-3 • SB ZL-4 c. Check intermediate range neutron flux - DECREASING <ul style="list-style-type: none"> • SE NI-35B [GAMMA METRICS] • SE NI-36B [GAMMA METRICS]
	SRO, BOP	2. Verify Turbine Trip a. Check Main Stop Valves – ALL CLOSED
	SRO, ATC	3. Check AC Emergency Busses – AT LEAST ONE ENERGIZED <ul style="list-style-type: none"> * NB01 – ENERGIZED * NB02 – ENERGIZED
	SRO, ATC	4. Check If Safety Injection Is Actuated: a. Check any indication SI is actuated - LIT <ul style="list-style-type: none"> * Annunciator 00-030A, NF039A LOCA SEQ ACTUATED – LIT * Annunciator 00-031A, NF039B LOCA SEQ ACTUATED – LIT * ESFAS status panel SIS section – ANY WHITE LIGHTS LIT * Partial Trip Status Permissive/ Block status panel – SI RED LIGHT LIT b. Check both trains of SI actuated. <ul style="list-style-type: none"> • Ann 00-030A, NF039A LOCA SEQ ACTUATED – LIT • Ann 00-031A, NF039B LOCA SEQ ACTUATED – LIT
CAUTION: If offsite power is lost after SI reset, manual action may be required to restore safeguards equipment to the required configuration.		

Op-Test No.: _____ Scenario No.: 4 Event No.: 7Page 25 of 40Event Description: Major: 600 gpm LOCA – Cold Leg Loop ‘C’EMG E-0, REACTOR TRIP OR SAFETY INJECTION**Critical Task: Establish 270, 000 lbm/hr Auxiliary Feedwater (AFW) flow before completion of Attachment F of EMG E-0.**

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	5. Check if SI is required: <ul style="list-style-type: none"> * SI was manually actuated AND was required * Containment pressure is currently or has been – GREATER THAN OR EQUAL TO 3.5 PSIG * RCS pressure is currently or has been – LESS THAN OR EQUAL TO 1830 PSIG * Any S/G pressure is currently or has been – LESS THAN OR EQUAL TO 615 PSIG
	SRO, BOP	6. Check Main Generator Breakers And Exciter Breaker – OPEN <ul style="list-style-type: none"> • MA ZL-3A • MA ZL-4A • MB ZL-2
	SRO, ATC, BOP	7. Verify Automatic Actions Using Attachment F, AUTOMATIC SIGNAL VERIFICATION
	SRO, BOP	8. Check Total AFW Flow – GREATER THAN 270, 000 LBM/HR; If NO, Perform RNO 8. RNO Perform the following: <ol style="list-style-type: none"> a. IF S/G narrow range level in at least one S/G is greater than 6% [29%], THEN control feed flow to maintain narrow range level and go to Step 9. b. Manually start pumps and align valves as necessary to establish greater than 270, 000 lbm AFW flow. CT: Establish 270, 000 lbm/hr Auxiliary Feedwater (AFW) flow before completion of Attachment F of EMG E-0. TDAFW autostart failure; manual start available. EXAMINER NOTE: <ul style="list-style-type: none"> * Depress OPEN pushbutton for LOOP 3 STEAM TO AFP TURB, AB HIS-6A * Depress OPEN pushbutton for LOOP 2 STEAM TO AFP TURB, AB HIS-5A • Depress OPEN pushbutton for AFP TURB MECH TRIP/THROT VLV, FC HIS-312A <ol style="list-style-type: none"> c. IF total AFW flow greater than 270, 000 lbm/hr can NOT be established, THEN perform the following: <ol style="list-style-type: none"> 1) Direct operator to monitor Critical Safety Functions using EMG F-0, CRITICAL SAFETY FUNCTION STATUS TREES (CSFST).

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 26 of 40Event Description: Major: 600 gpm LOCA – Cold Leg Loop 'C'EMG E-0, REACTOR TRIP OR SAFETY INJECTION

Time	Position	Applicant's Actions or Behavior
	SRO, BOP	8. RNO cont. 2) Ensure BIT Inlet AND Outlet Valves are open <ul style="list-style-type: none"> • EM HIS-8803A • EM HIS-8803B • EM HIS-8801A • EM HIS-8801B 3) Continue with Attachment F and Go to EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Step 1.
	SRO, BOP	<u>9.</u> Check RCS Cold Leg Temperatures; If No, Perform RNO <ul style="list-style-type: none"> * Stable at or trending to 557°F for condenser steam dumps * Stable at or trending to 561°F for S/G ARVs * Stable at or trending to 557°F for S/G ARVs if recovering from an inadvertent SI
	SRO, BOP	<u>9.</u> RNO Perform the following: a. IF temperature is less than setpoint and decreasing, THEN perform the following: <ol style="list-style-type: none"> 1. Stop dumping steam. 2. IF any MSIV is open, THEN close Main Turbine Stop And Control Valves Startup Drains. <ul style="list-style-type: none"> • AC HIS_134 3. IF cooldown continues, THEN control total feedflow to limit RCS cooldown. Maintain total feed flow greater than 270, 000 lbm/hr until narrow range level greater than 6% [29%] in at least one S/G. 4. IF cooldown continues due to excessive steam flow, THEN isolate main steamlines by depressing MS ISO VLV ALL CLOSE pushbutton(s). <ul style="list-style-type: none"> * AB HS-79 * AB HS-80 b. IF temperature is greater than setpoint and increasing, THEN perform one of the following: <ul style="list-style-type: none"> * Dump steam to condenser * Dump steam using S/G ARVs.

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 27 of 40Event Description: Major: 600 gpm LOCA – Cold Leg Loop ‘C’EMG E-0, REACTOR TRIP OR SAFETY INJECTION

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	10. Establish S/G Pressure Control: <ol style="list-style-type: none"> Check condenser - AVAILABLE <ul style="list-style-type: none"> C-9 LIT MSIV – OPEN Circulating water pumps – RUNNING Place Steam header Pressure Control in Manual <ul style="list-style-type: none"> AB PK-507 Manually set Steam Header Pressure Control output to zero <ul style="list-style-type: none"> AB PK-507 Place Steam Dump Select Switch in STEAM PRESS position <ul style="list-style-type: none"> AB US-500Z Place Steam Header Pressure Control in Automatic <ul style="list-style-type: none"> AB PK-507
	SRO, ATC, BOP	11. Check PZR PORVs <ol style="list-style-type: none"> Check PZR PORVs - CLOSED <ul style="list-style-type: none"> BB HIS-455A BB HIS-456A Power to block valves - AVAILABLE <ul style="list-style-type: none"> BB HIS-8000A BB HIS-8000B RCS pressure – LESS THAN 2185 PSIG
	SRO, ATC, BOP	12. Check Normal PZR Spray Valves – CLOSED <ul style="list-style-type: none"> BB ZL-455B BB ZL-455C
	SRO, ATC, BOP	13. Check PZR Safety Valves – CLOSED <ul style="list-style-type: none"> BB ZL-8010A BB ZL-8010B BB ZL-8010C
NOTE: Seal injection flow shall be maintained to all RCPs.		

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 28 of 40Event Description: Major: 600 gpm LOCA – Cold Leg Loop ‘C’EMG E-0, REACTOR TRIP OR SAFETY INJECTION

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	14. Check If RCPs Should Be Stopped: a. Check RCPs – ANY RUNNING b. Check RCS pressure – LESS THAN 1400 PSIG; No, Perform RNO 14.RNO b. Go to Step 15.
	SRO	15. Direct Operator To Monitor Critical Safety Functions Using EMG F-0, CRITICAL SAFETY FUNCTION STATUS TREES (CSFST).
	SRO, BOP	16. Check If S/Gs Are Not Faulted: a. Check pressures in all S/Gs - <ul style="list-style-type: none"> • NO S/G PRESSURES DECREASING IN AN UNCONTROLLED MANNER • NO S/G COMPLETELY DEPRESSURIZED
	SRO, BOP, ATC	17. Check If S/G Tubes Are Intact: <ul style="list-style-type: none"> * Check S/G Levels – NOT INCREASING IN AN UNCONTROLLED MANNER <ul style="list-style-type: none"> • Narrow Range • Wide Range * Condenser air discharge radiation – NORMAL BEFORE ISOLATION <ul style="list-style-type: none"> • GEG 925 * S/G blowdown and sample radiation – NORMAL BEFORE ISOLATION <ul style="list-style-type: none"> • BML 266 • SJL 026 * Turbine driven auxiliary feedwater pump exhaust radiation – NORMAL <ul style="list-style-type: none"> • FCT 381 * S/G steamline radiation – NORMAL <ul style="list-style-type: none"> • ABS 114 for S/G A • ABS 113 for S/G B • ABS 112 for S/G C • ABS 111 for S/G D

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 29 of 40Event Description: Major: 600 gpm LOCA – Cold Leg Loop ‘C’EMG E-0, REACTOR TRIP OR SAFETY INJECTION

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	<p>18. Check IF RCS Is Intact in Containment:</p> <ul style="list-style-type: none"> * Containment radiation – NORMAL BEFORE ISOLATION <ul style="list-style-type: none"> • GTP 311 • GTI 312 • GTG 313 • GTP 321 • GTI 322 • GTG 323 • GTA 591 • GTA 601 * Containment pressure – NORMAL; If No, Perform RNO <ul style="list-style-type: none"> • GN PI-934 • GN PI-935 • GN PI-936 • GN PI-937 • GT PDI-40 • GN PR-934 * Containment sump level – NORMAL; If No, Perform RNO <ul style="list-style-type: none"> • EJ LI-7 • EJ LI-8 • EJ LR-6 • LF LI-9 • LF LI-10 <p>18. RNO Perform the following:</p> <p>a. Ensure BIT Inlet AND Outlet Valves are open</p> <ul style="list-style-type: none"> • EM HIS-8803A • EM HIS-8803B • EM HIS-8801A • EM HIS-8801B <p>b. Go to EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.</p>
EXAMINER NOTE: SRO leads a Transition Brief prior to performing EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT.		

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 30 of 40Event Description: EMG E-0 REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT F,
AUTOMATIC SIGNAL VERIFICATION

Time	Position	Applicant's Actions or Behavior
	ATC, BOP	F1. Check AC Emergency Busses – ENERGIZED <ul style="list-style-type: none"> • NB01 – ENERGIZED • NB02 – ENERGIZED
	ATC, BOP	F2. Verify Feedwater Isolation <p>a. Main feedwater pumps - TRIPPED</p> <ul style="list-style-type: none"> • Annunciator 00-120A, MFP A TRIP – LIT • Annunciator 00-123A, MFP B TRIP – LIT <p>b. Main feedwater reg valves - CLOSED</p> <ul style="list-style-type: none"> • AE ZL-510 for S/G A • AE ZL-520 for S/G B • AE ZL-530 for S/G C • AE ZL-540 for S/G D <p>c. Main feedwater reg bypass valves - CLOSED</p> <ul style="list-style-type: none"> • AE ZL-550 for S/G A • AE ZL-560 for S/G B • AE ZL-570 for S/G C • AE ZL-580 for S/G D <p>d. Main feedwater isolation valves – CLOSED</p> <ul style="list-style-type: none"> • AE HIS-39 for S/G A • AE HIS-40 for S/G B • AE HIS-41 for S/G C • AE HIS-42 for S/G D <p>e. Main feedwater chemical injection valves – CLOSED</p> <ul style="list-style-type: none"> • AE HIS-43 for S/G A • AE HIS-44 for S/G B • AE HIS-45 for S/G C • AE HIS-46 for S/G D <p>f. Check ESFAS status panel SGBSIS section – ALL WHITE LIGHTS LIT</p> <ul style="list-style-type: none"> • Red train • Yellow train

Op-Test No.: _____ Scenario No.: 4 Event No.: 8Page 31 of 40Event Description: EMG E-0, ATTACHMENT F, AUTOMATIC SIGNAL VERIFICATION**CT: Close containment isolation valves such that at least one valve is closed on each critical phase-A penetration before completion of Attachment F of EMG E-0.**

Time	Position	Applicant's Actions or Behavior
	ATC, BOP	<p>F3. Verify Containment Isolation Phase A:</p> <p>a. Check ESFAS status panel CISA section – ALL WHITE LIGHTS LIT</p> <ul style="list-style-type: none"> • Red train • Yellow train; No, Perform RNO
	ATC, BOP	<p>F3 RNO a. Perform the following:</p> <p>1. IF containment isolation phase A has NOT actuated, THEN manually actuate containment isolation phase A.</p> <ul style="list-style-type: none"> • SB HS-47 • SB HS-48 <p>2. IF any CISA valve NOT closed, THEN manually close valve. If valve(s) can BOT be closed, THEN manually or locally isolate affected containment penetration. Refer to ATTACHMENT B, VALVES CLOSED BY CONTAINMENT ISOLATIONSIGNAL PHASE A.</p> <p>CT: Close containment isolation valves such that at least one valve is closed on each critical phase-A penetration before completion of Attachment F of EMG E-0.</p> <p>ATC/BOP: Rotates J-handle for CISA SB HS-47 and CISA SB HS-48 to ACTUATE.</p> <p>ATC/BOP: At ESFAS status panels, determines CISA Yellow train status for CTMT ATMS MON VLV GSHV36 and CISA Red train status for CTMT ATMS MON VLV GSHV34 White light NOT LIT.</p> <p>ATC/BOP: On RL020 Panel, locates (Yellow train) CTMT ATMS MONITOR SPLY CTMT ISO VLV, GS HIS-36 – Depress CLOSE pushbutton.</p> <p>ATC/BOP: On RL020 panel, locates (Red train) CTMT ATMS MONITOR RETURN CTMT ISO VLV GS HIS-34 – Depresses CLOSE pushbutton.</p> <p>Not critical: At ESFAS status panels, verifies CISA section – ALL WHITE LIGHTS LIT.</p>

Op-Test No.: _____ Scenario No.: 4 Event No.: 7Page 32 of 40Event Description: EMG E-0, ATTACHMENT F, AUTOMATIC SIGNAL VERIFICATION

Critical Task: Establish 270, 000 lbm/hr Auxiliary Feedwater (AFW) flow before completion of Attachment F of EMG E-0.

Time	Position	Applicant's Actions or Behavior
	ATC, BOP	<p>F4. Verify AFW Pumps Running:</p> <p>a. Check motor driven AFW pumps – BOTH RUNNING; No, Perform RNO</p> <p>F4. RNO a. Manually start pumps</p> <p>EXAMINER NOTE: Recall MD AFW 'A' tagged out. Unable to be started</p>
	ATC/BOP	<p>F4. cont.</p> <p>b. Check turbine driven AFW pump – RUNNING; If No, Perform RNO</p> <p>F4. RNO b. Perform the following:</p> <p>1. Check if turbine driven AFW pump should be running:</p> <ul style="list-style-type: none"> * At least 2/4 S/G narrow range level channels on 2/4 S/Gs – LESS THAN 23.5% OR * Loss of NB01 voltage has occurred OR * Loss of NB02 voltage has occurred OR * AMSAC actuation <p>2. IF turbine driven AFW pump should be running, THEN manually open steam supply valves:</p> <ul style="list-style-type: none"> a. AB HIS-5A b. AB HIS-6A c. FC HIS-312C <p>CT: Establish 270, 000 lbm/hr Auxiliary Feedwater (AFW) flow before completion of Attachment F of EMG E-0.</p> <p>EXAMINER NOTE:</p> <ul style="list-style-type: none"> a. Depress OPEN pushbutton for LOOP 2 STEAM TO AFP TURB, AB HIS-5A b. Depress OPEN pushbutton for LOOP 3 STEAM TO AFP TURB, AB HIS-6A c. Depress OPEN pushbutton for AFP TURB MECH TRIP/THROT VLV, FC HIS-312A
	ATC, BOP	<p>F5. Verify ECCS Pumps Running:</p> <p>a. Check CCPs – BOTH RUNNING</p> <p>b. Check SI pumps – BOTH RUNNING</p> <p>c. Check RHR pumps – BOTH RUNNING</p>

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 33 of 40Event Description: EMG E-0, ATTACHMENT F, AUTOMATIC SIGNAL VERIFICATION

Time	Position	Applicant's Actions or Behavior
	ATC, BOP	F6. Verify CCW Alignment: a. Check CCW pumps – ONE RUNNING IN EACH TRAIN b. Check one pair of CCW service loop Supply And Return Valves for an operating CCW pump - OPEN * EG ZL-15 AND EG ZL-53 OR * EG ZL-16 AND EG ZL-54
	ATC, BOP	F7. Check ESW Pumps – BOTH RUNNING
	ATC, BOP	F8. Check Containment Fan Coolers – RUNNING IN SLOW SPEED
	ATC, BOP	F9. Verify Containment Purge Isolation: a. Check ESFAS status panel CPIS section – ALL WHITE LIGHTS LIT • Red train • Yellow train; No, Perform RNO
	ATC/BOP	F9. RNO a. Perform the following: 1. IF containment purge isolation has NOT actuated, THEN manually actuate containment purge isolation. • SA HS-11 • SA HS-15 2. IF any CPIS component NOT properly aligned, THEN manually align component. 3. IF component(s) can NOT be manually aligned, THEN locally isolate instrument air to affected containment penetration. Refer to ATTACHMENT C, VALVES CLOSED BY CONTAINMENT POURGE ISOLATION SIGNAL. ATC/BOP: • At RL018 panel, (Red train) CTMT PURGE TRN A ISO, SA HS-11, ACTUATE pushbutton depressed. • At RL018 panel, (Yellow train) CTMT PURGE TRN B ISO, SA HS-15, ACTUATE pushbutton depressed. ATC/BOP reverifies ALL WHITE LIGHTS LIT for ESFAS status panels CPIS section, Red train and Yellow train.

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 34 of 40Event Description: EMG E-0, ATTACHMENT F, AUTOMATIC SIGNAL VERIFICATION

Time	Position	Applicant's Actions or Behavior
	ATC, BOP	F10. Verify Both Trains Of Control Room Ventilation Isolation: a. Check ESFAS status panel CRIS section – ALL WHITE LIGHTS LIT <ul style="list-style-type: none"> • Red train • Yellow train b. Ensure Control Room outer door - CLOSED
	ATC, BOP	F11. Verify Main Steamline Isolation Not Required: a. Check containment pressure – HAS REMAINED LESS THAN 17 PSIG <ul style="list-style-type: none"> • GN PR-934 b. Check either condition below - SATISFIED <ul style="list-style-type: none"> * Low steamline pressure SI – NOT BLOCKED AND steam line pressure – HAS REMAINED GREATER THAN 615 PSIG OR * Low steamline pressure SI – BLOCKED AND steamline pressure rate – HAS REMAINED LESS THAN 100 PSI/50 SEC
	ATC, BOP	F12. Verify Containment Spray Not Required: a. Containment pressure – HAS REMAINED LESS THAN 27 PSIG: <ul style="list-style-type: none"> • Annunciator 00-059A, CSAS - NOT LIT • Annunciator 00-059B, CISB – NOT LIT • GN PR-934
	ATC, BOP	F13. Verify ECCS Flow: a. Check Centrifugal Charging Pumps TO Boron Injection Tank Flow meters – FLOW INDICATED <ul style="list-style-type: none"> • EM FI-917A • EM FI-917B b. Check RCS pressure – LESS THAN 1700 PSIG; No, Perform RNO F13 RNO b. Go to Step F14.
	ATC, BOP	F14. Verify AFW Valves – PROPERLY ALIGNED: a. Check ESFAS status panel AFAS section – ALL WHITE LIGHTS LIT b. Check white train ESFAS status panel AFAS section – ALL WHITE LIGHTS LIT

[illegible]

Op-Test No.: _____	Scenario No.: <u>4</u>	Event No.: <u>6</u>	Page <u>36</u> of <u>40</u>
Event Description: <u>Major: 600 gpm LOCA – Cold Leg Loop ‘C’</u>			
<u>EMG E-1, rev 21, LOSS OF REACTOR OR SECONDARY COOLANT</u>			
Time	Position	Applicant's Actions or Behavior	
NOTES <ul style="list-style-type: none"> Foldout page shall be monitored throughout this procedure. Seal injection flow shall be maintained to all RCPs. 			
FOLDOUT PAGE CRITERIA			
1. SI REINITIATION CRITERIA 2. RCP TRIP CRITERIA 3. SECONDARY INTEGRITY CRITERIA 4. EMG E-3 TRANSITION CRITERIA 5. COLD LEG RECIRCULATION CRITERIA 6. AFW SUPPLY SWITCHOVER CRITERIA			
	SRO, ATC, BOP	Crew enters and performs EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT. SRO directs EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT.	
	SRO, ATC, BOP	1. Check If RCPs Should Be Stopped: a. Check RCPS – ANY RUNNING b. Check RCS pressure – LESS THAN 1400 PSIG; No, Perform RNO 1. RNO b. Go to step 2.	
	SRO, BOP	2. Check If S/Gs Are Not Faulted: a. Check pressures in all S/Gs. <ul style="list-style-type: none"> NO S/G PRESSURE DECREASING IN AN UNCONTROLLED MANNER NO S/G COMPLETELY DEPRESSURIZED 	
	SRO, BOP	<u>3.</u> Check Intact S/G Levels: a. Check Narrow Range Level In At Least One S/G – GREATER THAN 6% [29%]; If No, Perform RNO <u>3.</u> RNO a. Maintain total feed flow greater than 270, 000 lbm/hr, until narrow range level greater than 6% [29%] in at least one S/G. Back to step <u>3.</u> Control feed flow to maintain narrow range level in all S/Gs between 6% [29%] and 50%.	

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 37 of 40Event Description: Major: 600 gpm LOCA – Cold Leg Loop ‘C’EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT

Time	Position	Applicant's Actions or Behavior
CAUTION If offsite power is lost after SI reset, manual action may be required to restore safeguards equipment to the required configuration.		
	SRO, ATC	4. Reset SI. <ul style="list-style-type: none"> • SB HS-42A • SB HS-43A
	SRO, ATC, BOP	5. Reset Containment Isolation Phase A And Phase B. <ul style="list-style-type: none"> • SB HS-56 For Phase A • SB HS-53 For Phase A • SB HS-55 For Phase B • SB HS-52 For Phase B
CAUTION If steamlines in Area 5 of Auxiliary Building are not intact, extreme caution will be necessary when performing local surveys.		
	SRO, ATC, BOP	6. Determine Secondary Radiation Levels: <ol style="list-style-type: none"> a. Direct Health Physics t survey steamlines in Area 5 of Aux Bldg b. Check S/G Sampling - ISOLATED c. Ensure Temporary CCW Pump and Temporary CCW Chiller, as needed, are inservice per SYS EG-130, RADWASTE CCW SYSTEM OPERATION. d. WHEN Temporary CCW Pump is inservice, THEN open all S/G sample isolation valves. <ul style="list-style-type: none"> • BM HIS-65 For S/G A • BM HIS-35 For S/G A • BM HIS-66 For S/G B • BM HIS-36 For S/G B • BM HIS-67 For S/G C • BM HIS-37 For S/G C • BM HIS-68 For S/G D • BM HIS-38 For S/G D e. Direct Chemistry to sample all S/Gs for activity.

Op-Test No.: _____ Scenario No.: 4 Event No.: 6Page 38 of 40Event Description: Major: 600 gpm LOCA – Cold Leg Loop ‘C’EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT

Time	Position	Applicant's Actions or Behavior
Simulator Operator: If called as Health Physics: acknowledge survey request for Area 5. If called as Radwaste Operator, report Temporary CCW pump and chiller not in service. (not modeled) If called as Chemistry: acknowledge sample request for all steam generators.		
	SRO, ATC, BOP	7. Check Secondary Radiation a. Condenser Air Discharge Radiation – NORMAL BEFORE ISOLATION <ul style="list-style-type: none"> • GEG 925 b. S/G Blowdown Radiation – NORMAL BEFORE ISOLATION <ul style="list-style-type: none"> • BML 256 c. S/G Sampler Radiation - NORMAL <ul style="list-style-type: none"> • SJL 026 • Sample results d. Turbine Driven Auxiliary Feedwater Pump Exhaust Radiation - NORMAL <ul style="list-style-type: none"> • FCT 381 e. S/G Steamline Radiation - NORMAL <ul style="list-style-type: none"> • ABS 114 For S/G A • ABS 113 For S/G B • ABS 112 For S/G C • ABS 111 For S/G D • Local surveys
CAUTIN If any PZR PORV opens because of high PZR pressure, the PORV shall be monitored to ensure it recluses after pressure decreases to less than 2335 psig.		
	SRO, ATC, BOP	8. Check PZR PORVs And Block Valves: a. Power To Block Valves - AVAILABLE <ul style="list-style-type: none"> • BB HIS-8000A • BB HIS-8000B b. PZR PORVs - CLOSED <ul style="list-style-type: none"> • BB HIS-455A • BB HIS-456A c. RCS Pressure – LESS THAN 2185 PSIG
NOTE Locally opening EF HV-43, ESW A TO AIR COMPRESSOR or EF HV-44, ESW B TO AIR COMPRESSOR requires the associated ESW Train to be declared inoperable. Local opening of the valve, on 2000' NORTH END AUX BLDG, will preclude it from automatically isolating on a high flow condition.		

Op-Test No.: _____ Scenario No.: 4 Event No.: _____Page 39 of 40Event Description: Major: 600 gpm LOCA – Cold Leg Loop ‘C’EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT

Time	Position	Applicant's Actions or Behavior
	SRO, ATC, BOP	<p>9. Verify Instrument Air Compressor Is Running:</p> <p>a. Ensure At Least One ESW TRN TO AIR COMPRESSOR Valve – OPEN</p> <ul style="list-style-type: none"> * EF HIS-43 * EF HIS-44 <p>b. Check AIR COMPRESSOR BRKR RESET Switch Associated With Open ESW Valve(s) – CLOSED; No, Perform RNO</p> <p>9. RNO b. Reset and close AIR COMPRESSOR BRKR RESET Switch.</p> <ul style="list-style-type: none"> * KA HIS-3C * KA HIS-2C <p>Back to step 9. c. Check INST AIR PRESS – GREATER THAN 105 PSIG</p> <ul style="list-style-type: none"> • KA PI-40 <p>d. check Neither ESW TO AIR COMPRESSOR Valve – Locally Opened</p> <ul style="list-style-type: none"> • EF HV-43 • EF HV-44 <p>e. Check Both ESW TRN TO AIR COMPRESSOR Valves - OPEN</p> <ul style="list-style-type: none"> • EF HIS-43 • EF HIS-44 <p>f. Check Both AIR COMPRESSOR BRKR RESET Switches – CLOSED</p> <ul style="list-style-type: none"> • KA HIS-3C • KA HIS-2C
	SRO, ATC, BOP	<p>10. Verify Instrument Air To Containment:</p> <p>a. Check PZR PRESS MASER CTRL Output – LESS THAN 50%</p> <ul style="list-style-type: none"> • BB PK-455A <p>b. Open INST AIR SPLY CTMT ISO VLV.</p> <ul style="list-style-type: none"> • KA HIS-29
	SRO, ATC, BOP	<p>11. Check If ECCS Flow Should Be Reduced:</p> <p>a. RCS Subcooling – GREATER THAN 30°F [45°F]</p> <p>b. Secondary Heat Sink:</p> <ul style="list-style-type: none"> * Total Feed Flow To Intact S/Gs – GREATER THAN 270, 000 LBM/HR OR * Narrow Range Level In At Least One Intact S/G – GREATER THAN 6% [29%] <p>c. RCS Pressures – STABLE OR INCREASING; If No, Perform RNO.</p> <p>11. RNO c. Go to step 12.</p>

FINAL NRC 4 5

Facility:		Wolf Creek - Overview		Date of Exam:		July 22-26, 2013		Operating Test No.:									
A P P L I C A N T	E V E N T T Y P E	Scenarios												T O T A L	M I N I M U M (*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U
RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>	RX	0			4			0			5			2	1	1	0
	NOR	0			0			0			0			0	1	1	1
	I/C	1234 67			1236 7			1234 67			1234 78			23	4	4	2
	MAJ	5			58			5			6			5	2	2	1
	TS	123			234			124			1435			13	0	2	2
RO <input type="checkbox"/> ATC <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX		0			4			0			5		2	1	1	0
	NOR		0			0			0			0		0	1	1	1
	I/C		137			136			1367			138		13	4	4	2
	MAJ		5			58			5			6		5	2	2	1
	TS		0			0			0			0		0	0	2	2
RO <input type="checkbox"/> BOP <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX			0			4			0			5	2	1	1	0
	NOR			0			0			0			0	0	1	1	1
	I/C			246			27			24			247	10	4	4	2
	MAJ			5			58			5			6	5	2	2	1
	TS			0			0			0			0	0	0	2	2
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX														1	1	0
	NOR														1	1	1
	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2

Instructions:

- Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
- Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
- Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility: Wolf Creek		Date of Exam: July 22-26, 2013		Operating Test No.:													
A P P L I C A N T	E V E N T T Y P E	Scenarios: Day 1, Day 2 and Day 3												T O T A L	M I N I M U M(*)		
		2			3 – Low Power			1									
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U
RO <input type="checkbox"/>	RX	4			0				0					1	1	1	0
SRO-I <input checked="" type="checkbox"/>	NOR	0			0				0					0	1	1	1
SRO-U <input type="checkbox"/>	I/C	1236 7			1234 67				137					14	4	4	2
	MAJ	58			5				5					4	2	2	1
	TS	234			124				0					6	0	2	2
RO <input checked="" type="checkbox"/>	RX		4				0			0				1	1	1	0
SRO-I <input checked="" type="checkbox"/>	NOR		0				0			0				0	1	1	1
SRO-U <input type="checkbox"/>	I/C		136				24			246				8	4	4	2
	MAJ		58				5			5				4	2	2	1
	TS		0				0			0				0	0	2	2
RO <input checked="" type="checkbox"/>	RX			4		0								1	1	1	0
SRO-I <input checked="" type="checkbox"/>	NOR			0		0								0	1	1	1
SRO-U <input type="checkbox"/>	I/C			27		1367								6	4	4	2
	MAJ			58		5								3	2	2	1
	TS			0		0								0	0	2	2
RO <input type="checkbox"/>	RX														1	1	0
SRO-I <input type="checkbox"/>	NOR														1	1	1
SRO-U <input type="checkbox"/>	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2

Facility:		Wolf Creek – Other RO's		Date of Exam:		July 22-26, 2013		Operating Test No.:											
A P P L I C A N T	E V E N T T Y P E	Scenarios: Day 1 and Day 2																	
		2			3 – Low Power									T O T A L	M I N I M U M(*)				
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION								
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U		
RO	RX		4				0							1	1	1	0		
<input checked="" type="checkbox"/>	NOR		0				0							0	1	1	1		
SRO-I	I/C		136				24							5	4	4	2		
<input type="checkbox"/>	MAJ		58				5							3	2	2	1		
SRO-U	TS		0				0							0	0	2	2		
<input type="checkbox"/>																			
RO	RX			4		0								1	1	1	0		
<input checked="" type="checkbox"/>	NOR			0		0								0	1	1	1		
SRO-I	I/C			27		1367								6	4	4	2		
<input type="checkbox"/>	MAJ			58		5								3	2	2	1		
SRO-U	TS			0		0								0	0	2	2		
<input type="checkbox"/>																			
RO	RX														1	1	0		
<input type="checkbox"/>	NOR														1	1	1		
SRO-I	I/C														4	4	2		
<input type="checkbox"/>	MAJ														2	2	1		
SRO-U	TS														0	2	2		
<input type="checkbox"/>																			
RO	RX														1	1	0		
<input type="checkbox"/>	NOR														1	1	1		
SRO-I	I/C														4	4	2		
<input type="checkbox"/>	MAJ														2	2	1		
SRO-U	TS														0	2	2		
<input type="checkbox"/>																			

Facility: Wolf Creek		Date of Exam: July 22-26, 2013		Operating Test No.:													
A P P L I C A N T	E V E N T T Y P E	Scenarios: Day 1, Day 2 and Day 3												T O T A L	M I N I M U M(*)		
		4			1			3 – Low Power									
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
		R	I	U													
RO <input type="checkbox"/>	RX	5			0				0					1	1	1	0
SRO-I <input checked="" type="checkbox"/>	NOR	0			0				0					0	1	1	1
SRO-U <input checked="" type="checkbox"/>	I/C	1234 78			1234 67				1367					16	4	4	2
<input type="checkbox"/>	MAJ	6			5				5					3	2	2	1
	TS	1435			123				0					7	0	2	2
RO <input checked="" type="checkbox"/>	RX		5				0			0				1	1	1	0
SRO-I <input checked="" type="checkbox"/>	NOR		0				0			0				0	1	1	1
SRO-U <input type="checkbox"/>	I/C		138				246			24				8	4	4	2
<input type="checkbox"/>	MAJ		6				5			5				3	2	2	1
	TS		0				0			0				0	0	2	2
RO <input checked="" type="checkbox"/>	RX			5		0								1	1	1	0
SRO-I <input checked="" type="checkbox"/>	NOR			0		0								0	1	1	1
SRO-U <input type="checkbox"/>	I/C			247		137								6	4	4	2
<input type="checkbox"/>	MAJ			6		5								2	2	2	1
	TS			0		0								0	0	2	2
RO <input type="checkbox"/>	RX														1	1	0
SRO-I <input type="checkbox"/>	NOR														1	1	1
SRO-U <input type="checkbox"/>	I/C														4	4	2
<input type="checkbox"/>	MAJ														2	2	1
	TS														0	2	2

Facility: Wolf Creek – Other RO's		Date of Exam: July 22-26, 2013		Operating Test No.:													
A P P L I C A N T	E V E N T T Y P E	Scenarios: Day 1 and Day 2												T O T A L	M I N I M U M(*)		
		4			1												
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U
RO	RX		5				0							1	1	1	0
<input checked="" type="checkbox"/>	NOR		0				0							0	1	1	1
SRO-I	I/C		138				246							6	4	4	2
<input type="checkbox"/>	MAJ		6				5							2	2	2	1
SRO-U	TS		0				0							0	0	2	2
<input type="checkbox"/>																	
RO	RX			5		0								1	1	1	0
<input checked="" type="checkbox"/>	NOR			0		0								0	1	1	1
SRO-I	I/C			247		137								6	4	4	2
<input type="checkbox"/>	MAJ			6		5								2	2	2	1
SRO-U	TS			0		0								0	0	2	2
<input type="checkbox"/>																	
RO	RX														1	1	0
<input type="checkbox"/>	NOR														1	1	1
SRO-I	I/C														4	4	2
<input type="checkbox"/>	MAJ														2	2	1
SRO-U	TS														0	2	2
<input type="checkbox"/>																	
RO	RX														1	1	0
<input type="checkbox"/>	NOR														1	1	1
SRO-I	I/C														4	4	2
<input type="checkbox"/>	MAJ														2	2	1
SRO-U	TS														0	2	2
<input type="checkbox"/>																	

Facility: Wolf Creek		Date of Exam: July 22-26, 2013		Operating Test No.:													
A P P L I C A N T	E V E N T T Y P E	Scenarios: Day 1, Day 2 and Day 3												T O T A L	M I N I M U M(*)		
		4			3 – Low Power			2									
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
		R	I	U													
RO <input type="checkbox"/>	RX	5			0				4				2	1	1	0	
SRO-I <input checked="" type="checkbox"/>	NOR	0			0				0				0	1	1	1	
SRO-U <input checked="" type="checkbox"/>	I/C	1234 78			1234 67				136				15	4	4	2	
<input type="checkbox"/>	MAJ	6			5				58				4	2	2	1	
	TS	1435			124				0				7	0	2	2	
RO <input checked="" type="checkbox"/>	RX		5				0			4			2	1	1	0	
SRO-I <input checked="" type="checkbox"/>	NOR		0				0			0			0	1	1	1	
SRO-U <input type="checkbox"/>	I/C		138				24			27			7	4	4	2	
<input type="checkbox"/>	MAJ		6				5			58			4	2	2	1	
	TS		0				0			0			0	0	2	2	
RO <input checked="" type="checkbox"/>	RX			5		0							1	1	1	0	
SRO-I <input checked="" type="checkbox"/>	NOR			0		0							0	1	1	1	
SRO-U <input type="checkbox"/>	I/C			247		1367							7	4	4	2	
<input type="checkbox"/>	MAJ			6		5							2	2	2	1	
	TS			0		0							0	0	2	2	
RO <input type="checkbox"/>	RX													1	1	0	
SRO-I <input type="checkbox"/>	NOR													1	1	1	
SRO-U <input type="checkbox"/>	I/C													4	4	2	
<input type="checkbox"/>	MAJ													2	2	1	
	TS													0	2	2	

Facility: Wolf Cree – Other RO's		Date of Exam: July 22-26, 2013		Operating Test No.:													
A P P L I C A N T	E V E N T T Y P E	Scenarios: Day 1 and Day 2												T O T A L	M I N I M U M(*)		
		4			3 – Low Power												
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U
RO <input checked="" type="checkbox"/>	RX		5			0							1	1	1	0	
SRO-I <input checked="" type="checkbox"/>	NOR		0			0							0	1	1	1	
<input type="checkbox"/>	I/C		138			24							5	4	4	2	
SRO-U <input type="checkbox"/>	MAJ		6			5							2	2	2	1	
<input type="checkbox"/>	TS		0			0							0	0	2	2	
RO <input checked="" type="checkbox"/>	RX			5		0							1	1	1	0	
SRO-I <input checked="" type="checkbox"/>	NOR			0		0							0	1	1	1	
<input type="checkbox"/>	I/C			247		1367							7	4	4	2	
SRO-U <input type="checkbox"/>	MAJ			6		5							2	2	2	1	
<input type="checkbox"/>	TS			0		0							0	0	2	2	
RO <input type="checkbox"/>	RX													1	1	0	
SRO-I <input type="checkbox"/>	NOR													1	1	1	
<input type="checkbox"/>	I/C													4	4	2	
SRO-U <input type="checkbox"/>	MAJ													2	2	1	
<input type="checkbox"/>	TS													0	2	2	
RO <input type="checkbox"/>	RX													1	1	0	
SRO-I <input type="checkbox"/>	NOR													1	1	1	
<input type="checkbox"/>	I/C													4	4	2	
SRO-U <input type="checkbox"/>	MAJ													2	2	1	
<input type="checkbox"/>	TS													0	2	2	

Facility: Wolf Creek		Date of Exam: July 22-26, 2013		Operating Test No.:													
A P P L I C A N T	E V E N T T Y P E	Scenarios: Day 1, Day 2 and Day 2												T O T A L	M I N I M U M(*)		
		1			4			2									
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U
RO <input type="checkbox"/>	RX	0			5				4					2	1	1	0
SRO-I <input checked="" type="checkbox"/>	NOR	0			0				0					0	1	1	1
SRO-U <input type="checkbox"/>	I/C	1234 67			1234 78				136					15	4	4	2
	MAJ	5			6				58					4	2	2	1
	TS	123			1435				0					7	0	2	2
RO <input checked="" type="checkbox"/>	RX		0				5			4				2	1	1	0
SRO-I <input type="checkbox"/>	NOR		0				0			0				0	1	1	1
SRO-U <input type="checkbox"/>	I/C		137				247			27				8	4	4	2
	MAJ		5				6			58				4	2	2	1
	TS		0				0			0				0	0	2	2
RO <input checked="" type="checkbox"/>	RX			0		5								1	1	1	0
SRO-I <input type="checkbox"/>	NOR			0		0								0	1	1	1
SRO-U <input type="checkbox"/>	I/C			246		138								6	4	4	2
	MAJ			5		6								2	2	2	1
	TS			0		0								0	0	2	2
RO <input type="checkbox"/>	RX														1	1	0
SRO-I <input type="checkbox"/>	NOR														1	1	1
SRO-U <input type="checkbox"/>	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2

Facility: Wolf Creek – Other ROs		Date of Exam: July 22-26, 2013		Operating Test No.:													
A P P L I C A N T	E V E N T T Y P E	Scenarios: Day 1 and Day 2												T O T A L	M I N I M U M(*)		
		1			4												
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U
RO <input checked="" type="checkbox"/>	RX		0			5							1	1	1	0	
SRO-I <input checked="" type="checkbox"/>	NOR		0			0							0	1	1	1	
<input type="checkbox"/>	I/C		137			246							6	4	4	2	
SRO-U <input type="checkbox"/>	MAJ		5			6							2	2	2	1	
<input type="checkbox"/>	TS		0			0							0	0	2	2	
RO <input checked="" type="checkbox"/>	RX			0		5							1	1	1	0	
SRO-I <input checked="" type="checkbox"/>	NOR			0		0							0	1	1	1	
<input type="checkbox"/>	I/C			246		138							6	4	4	2	
SRO-U <input type="checkbox"/>	MAJ			5		6							2	2	2	1	
<input type="checkbox"/>	TS			0		0							0	0	2	2	
RO <input type="checkbox"/>	RX													1	1	0	
SRO-I <input type="checkbox"/>	NOR													1	1	1	
<input type="checkbox"/>	I/C													4	4	2	
SRO-U <input type="checkbox"/>	MAJ													2	2	1	
<input type="checkbox"/>	TS													0	2	2	
RO <input type="checkbox"/>	RX													1	1	0	
SRO-I <input type="checkbox"/>	NOR													1	1	1	
<input type="checkbox"/>	I/C													4	4	2	
SRO-U <input type="checkbox"/>	MAJ													2	2	1	
<input type="checkbox"/>	TS													0	2	2	

Facility: Wolf Creek		Date of Examination: July 2013		Operating Test No.												
Competencies	APPLICANTS															
	RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>				ATC RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				BOP RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions	1-7	1-8	1-7	1-8	137	136	7	138	24	27	24	247				
Comply With and Use Procedures (1)	1-7	1-8	1-7	1-8	135	134	135	135	24	246	24	245				
Operate Control Boards (2) when SRO-I at the ATC position	135	134	135	135	135	134	135	135	24	246	24	245				
Communicate and Interact	1-7	1-8	1-7	1-8	135	134	135	135	24	246	24	245				
Demonstrate Supervisory Ability (3)	1-7	1-8	1-7	1-8	NA	NA	NA	NA	NA	NA	NA	NA				
Comply With and Use Tech. Specs. (3)	123	234	124	134	NA	NA	NA	NA	NA	NA	NA	NA				
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.																

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.